The Journal of Obstetrics and Gynæcology of the British Empire

VOL. VIII. SEPTEMBER, 1905. No. 3.

The Methods of Artificially dilating the Pregnant and Parturient Uterus.

A REVIEW AND COMMENTARY.

By SIR WILLIAM J. SINCLAIR, M.D.

THE most important discussion of this subject which has as yet taken place formed part of the proceedings of the Congress of the German Gynæcological Society which met recently at Kiel (June 13–17, 1905). By far the most generally interesting and practically the most useful contributions to the transactions of the Congress were the addresses of Leopold, of Dresden, and Bumm, of Berlin, in introducing the discussion on the methods of dilating the cervix uteri during pregnancy and parturition.

There was a clear difference of opinion as to the best method available. Leopold advocated rapid dilatation by a mechanical contrivance on the principle of Bossi's dilator, while Bumm threw the weight of his experience and judgment on the side of incision, according to the principle, if not quite according to the practice, illustrated in Dührssen's "vaginal Cæsarean section."

From the outset Leopold claimed that the subject is of the greatest interest to the general practitioner, and all through his address there ran an implicit argument in favour of the adoption of the Bossi method in general practice as against its restriction to hospital work. In dividing the subject under the two natural heads of pregnancy and parturition, Leopold called attention to a thesis by Montuoro, of Genoa, published last year, entitled "A comparative study of Cæsarean section and *accouchement forcé* (il parto forzato) in regard to their indications." He says of this thesis that it brings

together and analyses the literature of the subject with astonishing industry. "A study of this work cannot be sufficiently recommended."

I. The Artificial Dilatation of the Cervix During Pregnancy.

Here we have to consider (1) abortion and (2) premature labour, artificially produced, and in the choice of a method we seek the most rapid and the safest.

A. *During the first half of pregnancy.*

Considering the effectiveness of individual methods which we have been using for years, Leopold thinks it is astonishing to read of the modern employment of unsatisfactory and even dangerous methods of bringing on abortion such as sponge-tents, tupelo-tents, electricity, catheters, forcing in one or more fingers, and such like. He speaks well of tamponade of the cervix and vagina, of the introduction of laminaria tents, and the use of dilators of vulcanite or steel.

What are the essential conditions to be laid down in the selection of an apparatus?

First, it must be easily sterilizable; secondly, it must be efficient, that is to say, it must stop or moderate hæmorrhage, produce pains and dilate the cervix; and thirdly, it must not produce any appreciable injury to the patient or bring her into any danger whatever.

It may be at once assumed that all hydrostatic dilators and all steel and vulcanite bougies or stems can be perfectly sterilised. Against other methods and means of dilating objections have been raised; especially is there a tendency to an unjustifiable suspicion of laminaria tents. Leopold considers the objection to tents unfounded. He describes his method of preparing them for use, and says: "I have never met with any mishap either with regard to rapid and sufficient dilatation of the cervix, or perfecting asepsis." "The uniformly good results recorded for many years by the various hospitals teaches us the same." With regard to the question of injuries during dilatation, Leopold places the laminaria tent, properly prepared and used, above all other methods of dealing with the intact uterus. Care must be taken to dilate the os internum uniformly with the rest of the cervix. The tent should just fit the lumen of the cervical canal. Leopold speaks of occasional "hour-glass" form of tent with difficulty in withdrawal, but this surely does not apply to the *pregnant* uterus. In using dilators of the Hegar type there is always danger of lacerating the internal os. If force is used in passing one of these dilators, and the resistance suddenly ceases, then *something has been torn.* If

this occurs, the employment of these dilators should be discontinued and two or three laminaria tents which reach beyond the os internum should be at once introduced.

The use of tampons for the purpose of dilating the cervix as practised by Hofmeier and his pupils is next discussed, but the subject is of comparatively little practical interest. Tamponade of the vagina should be firm in order to prevent hæmorrhage and to bring on uterine contraction.

When the completely intact uterus, in the absence of pains and hæmorrhage, has to be emptied, Leopold recommends the use of laminaria tents from day to day, introducing an increasing number until the cervix is dilated to the desired extent. "The result is almost without exception entirely prompt and satisfactory." The assistance of a midwife (*German* midwife) is all that the medical practitioner requires. The administration of an anæsthetic is seldom necessary. Certain obvious precautions against post-partum hæmorrhage are referred to, but Leopold's opinion is that the general practitioner may adopt this method with the fullest confidence *(mit vollstem Vertrauen)*.

When an abortion is in progress, with moderate bleeding and the os still closed, there is nothing to be gained by delay. The best course is to hasten the progress of the abortion. "The best, simplest and most certain means, after thorough antiseptic preparation of the external and internal genitals, is to firmly pack the vaginal vault and vagina with sterilized gauze." This process may have to be repeated in twenty-four hours, and quite exceptionally it may be necessary to resort to tangle tents.

In the case of abortion with continuous hæmorrhage, and when the os is dilated to the extent of admitting the index finger, Leopold expresses himself strongly against haste and the attempt at digital emptying of the uterus *(Es kann doch nicht dringend genug davor gewarnt werden)*. He strongly recommends the complete dilatation of the internal os uteri by means of laminaria tents. The delay of twenty-four hours ensures the complete expulsion of the contents of the uterus. And, he might have added, with the least possible discomfort to the patient.

When during the progress of an abortion there is hæmorrhage to an important extent, the canal of the uterus should be rapidly dilated by means of Hegar's dilators, and the effects of these may be supplemented in experienced hands by the cautious use of Bossi's dilator. While these instruments are being used, it is of the utmost importance that counter-pressure above the pubes should be exercised

by an assistant. It is, however, "only in quite extraordinarily rare cases that any question of employing Bossi's dilator will arise."

B. *During the second half, and more especially in the last weeks of pregnancy.*

The indications for interference are now almost always (1) contracted pelvis or serious disease of the mother; (2) eclampsia; and (3) placenta prævia. The essential requirements in a method to be adopted now, as in earlier cases, are that the apparatus can be rendered aseptic, that the proceeding brings on labour promptly and leads to its completion, and that it involves no danger to either mother or child.

Setting aside various methods resorted to in former times, which are now merely historic, we have to consider only those which are supported by long observation of uniformly satisfactory results. These are (1) tamponade of the cervix, (2) puncture of the membranes, (3) the introduction of bougies, and (4) dilatation of the cervix by means of bags or metal instruments. These methods may be employed individually or in combination according to the nature of the case.

(1) Tamponade of the cervix is effected in the Würzburg Clinic by means of iodoform gauze, which has been soaked in sterile glycerine. Hofmeier and his pupils have employed and tested this method for many years. It is free from danger and can be carried out aseptically, but it is not always effectual by itself, and must occasionally be supplemented by other measures. Labour is some time in beginning, and it is occasionally tedious, varying from ten to twenty-eight hours, and exceptionally lasting a week or even longer.

(2) Puncture of the membranes is a method which has fallen almost into disuse for many years. Interest in it has been revived recently by a report from the Basel Clinic of the experience of de Reynier. He employed it in 49 cases of deformed pelvis and saved 77·5 per cent. of the children. The *technique* is simple, and the operation is suitable for private practice, but it is not quite reliable, an objection which can be also raised against other methods. The average duration of labour from the time of puncture is 61 hours, but cases are reported in which 12, 13, and 18 days passed in the process of parturition from early phenomena to completion.

(3) The bougie method has for many years been the most generally adopted in public lying-in institutions. It is suitable for private practice, but it requires the very strictest use of antiseptics, and is never quite devoid of danger. The average duration of labour is "much over 30 hours." In one report of 228 cases it is shown that

in one-third the process occupied from 30 to 150 hours. This method must like the others just referred to be occasionally supplemented by other measures to hasten the labour and complete it.

(4) Of much greater importance is the direct dilatation of the cervix uteri by means of the various balloons or bags (Metreuryse) distended by boiled water or sterilized glycerine. It is a method which has been growing in favour everywhere for many years. What are its advantages and its drawbacks? In the first place it has the advantage over the methods just described that as a rule it soon brings on pains, and it effects the complete and in a sense physiological dilatation of the cervix uteri. Attention has chiefly to be drawn to the remarkable fact that when the os is dilated only sufficiently to permit of this method of "metreuryse," the canal can be so completely dilated in from half-an-hour to two hours as to permit of the extraction of a mature child without injury to the mother. Not less striking are the results obtained in placenta prævia. Among the drawbacks must be mentioned the fact that this method cannot be employed when the os is closed, so that other measures must be adopted to permit of its use. Then, when the bag has been introduced and distended partly inside the os internum it separates the membranes to an unnecessarily wide extent around the lower uterine segment, and displaces the presenting part of the fœtus. This displacement diminishes the number of spontaneous labours in vertex presentations and increases the demand for other operative proceedings; and every method requiring supplementary operation becomes thereby less suitable for private practice.

Moreover, the reports of series of cases published from time to time prove that the "morbidity" after metreuryse is remarkably high compared with that which results from other methods. This childbed illness chiefly results from lacerations which occur with a frequency, and to an extent that could hardly have been anticipated on theoretical grounds. The favour with which the method has been received depends chiefly upon its efficiency in enabling the accoucheur to complete the labour promptly. In this respect none of the other methods mentioned can compare with it.

Still, we require a better method than any of them—one which will not produce separation of membranes and especially of the presenting part, and by which at the same time pains will be promptly excited and the labour rapidly brought to an end.

In this way Leopold leads up to his advocacy of the employment of the Bossi dilator as the most rapid and safe, therefore the best of all methods. Its rivals are easily pushed aside. The blunt method

illustrated by digital dilatation (Harris-Bonnaire) is laborious, demands always prolonged anæsthesia and obstetric assistance, and it is not devoid of danger. It is therefore unsuitable for private practice. Leopold has himself had no experience of the method, but he cites witnesses of experience. One will suffice here. "In great detail Montuoro discusses the proceeding and expounds its advantages, its disadvantages, and its dangers, and the latter certainly far outweigh the former." There is an air of impartiality in Leopold's discussion of the facts to be weighed, but his conclusion brings no surprise; the method must be condemned because of the injuries to cervix, sometimes directly fatal, which so frequently result from the manipulations, and the large percentage of cases of infection after it has been employed *(recht häufig Infektionsfälle darnach vorgekommen).*

Of the "blunt" methods, as distinct from incisions, there only remains the employment of Bossi's dilator. Its merits have to be compared with those of the bloody methods, the type of which is the unfortunately designated "vaginal Cæsarean section" of Dührssen.

II. The Artificial Dilatation of the Os Uteri During Labour.

We assume that the indications exist for as rapid and safe completion of labour as possible, as for example in eclampsia. In such circumstances Leopold prefers Bossi's dilator; he describes the instrument, explains its advantages and the method of using it; and later he quotes testimonials in its favour.

(*a*) *The introduction:* In private practice the patient is placed in the dorsal position on the edge of the bed, that is "in a comfortable position"; in the hospital practice she is put on the operating table. The instrument is introduced with the right hand under the guidance of two or three fingers of the left hand. The handle is depressed towards the perineum, so that the branches, screwed close together, can be conducted from below upwards and from before backwards along the cervical canal. This introduction is carried out very slowly and cautiously, and in the intervals between pains, if these have already begun. Any difficulty caused by the presenting part is carefully overcome.

(*b*) Directly after the introduction the screw is turned until slight tension is put upon the cervix, and the instrument is felt to be fixed in its place. The process of stretching is now proceeded with by turning the handle in the intervals between the pains. The time occupied will depend upon the urgency or otherwise of the case. A

direction for an average case is to turn the screw from one-fourth to one-halfway round, and then wait for two or three pains to pass by. The farther the branches are separated the more exact must be the control of the cervix with the finger inserted within it. Dilatation to 9 cm., (say $3\frac{1}{2}$ inches), is sufficient on the average.

(*c*) *The position of the patient.* If the labour is to be hastened after the dilatation the patient is in the best position lying across the bed. If the instrument is to be used only to hasten the labour, the patient is replaced in the usual dorsal position in bed, and the accoucheur fixes the instrument in its place by means of suitable tapes or bandages, and waits. If the pains become severe the instrument is removed; if they become weak the screw is turned again in order to stimulate them.

(*d*) *The removal of the instrument.* The blades are merely screwed back into the position at the time of introduction, and the instrument is gently drawn out guided by the fingers of the left hand.

(*e*) *The extraction of the fœtus.* This is best effected by means of forceps. In exceptional cases the best method of completing labour may be version and extraction; but all are agreed that the use of the forceps gives the best prognosis for both mother and child.

Professor Leopold, after expressing the opinion that the Bossi method is best suited for cases of eclampsia, and other rarer conditions, but not applicable to cases of placenta prævia, declares: "Hence it is only when the indications are of the most urgent character because of serious danger to the mother or child, that we hold the employment of Bossi's method as justified."

Among the dangers involved in the process special attention is called to injuries to the cervix which may result from the instrument itself, or from the supplementary operation, forceps or version, which may be necessary.

Next we have a discussion of the question whether Bossi's dilator can be recommended for use in private practice. Leopold gives the impression of advocating the general adoption of the treatment with reservations which appear to neutralise the advocacy. The opinion of most readers of the paragraphs devoted to recommending the use of Bossi's dilator in private practice will, in all probability, be that of Leopold himself in reference to alternative proceedings: "Deep incisions into the cervix and vaginal Cæsarean section are best restricted to hospital practice, and should in private houses be performed only by masters in the art."

It is safe to say that the thanks of both obstetricians and general

practitioners are due to Leopold for much that his address contains. He has called attention prominently to the advantages of the use of efficiently sterilized laminaria tents in the first months of pregnancy. He recommends in the later months the use of bags, preceded if necessary by partial dilatation by laminaria or by "collum tamponade," preferably by the former. During labour he advises the employment of balloons, and, when there is urgent need for emptying the uterus at once, the Bossi dilator.

Professor E. Bumm next proceeded to discuss the "*Methods of artificially dilating the uterus during pregnancy and parturition.*" He called attention to the tendency of modern obstetrics towards surgical treatment—"to the rapid and certain completion of complicated labour by means of operative measures." But in order to carry out such treatment certain conditions must be complied with. The operator must be sufficiently fitted by training and experience, and the surroundings must be suitable. "What is safe and good with the skilled operator acting under the conditions existing in the hospital . . . may be for the practitioner in a private house too complicated, too difficult, and therefore too dangerous." Here at least is the frank expression of an opinion which is apparently at least in direct opposition to that of Leopold.

The newer methods of dilating the cervix in pregnancy may be divided into three groups:—(1) Tamponade, metreurysis, and such like measures, the success of which depends upon stimulating the uterus into contraction as in spontaneous parturition. (2) This group includes the methods which consist in dilating the uterus without seeking in any way to call into play the muscular contractions. For this purpose the appliances are the various dilators, whether in bougie form or with blades separating by the action of a screw, such as Bossi's. (3) The third method is that of incision. It is a long time since incisions into the cervix during labour came into use, but the confidence with which we now proceed to operate has arisen largely out of recent experience in extirpating the uterus and enucleating fibromata *per vaginam*. To Dührssen we owe chiefly the advantages derived from the new method of treatment by incision.

Incisions can be made without risk into the margin of the os uteri extending to the vaginal roof as soon as the os is dilated to the size of a half-crown piece. The margin of the os consists only of a duplicature of mucosa with connective tissue, with poor blood-supply between. The bladder and the retrouterine peritoneum are not endangered by the incisions if ordinary care is exercised.

When the cervix is partly dilated, while the external os remains thick and fleshy, spontaneous lacerations may extend deep into the parametrium, and incisions made in the dark may wound the bladder or pouch of Douglas, and may cause profuse hæmorrhage. Therefore when incisions are to be made into the intact cervix, they should be effected with the guidance of vision as well as touch after the parts have been exposed for the purpose by means of suitable specula.

Dührssen's vaginal Cæsarean section involves a double incision, one backwards ,another forwards. Bumm thinks such a method of proceeding may be necessary in cancer of the cervix, but in all other cases, where the object in view is the most rapid possible emptying of the uterus, Dührssen's operation is too complicated and bloody. The forward incision alone is sufficient for all purposes, even when the fœtus is at full term. This operation is easy and simple, and can be completed and the child extracted without hurry in from five to ten minutes.

Bumm's *technique*, founded on 52 hysterotomies, is as follows:— Disinfection of the field of operation with alcohol and sublimate solution. Exposure of the portio by means of two suitable specula. Dragging down of the cervix by two pairs of volsellum forceps, an easy proceeding in multiparæ. In this way the portio can be drawn down to the vulva, and the anterior vaginal wall put on the stretch. The next step is a median incision reaching from the external orifice to within two finger-breadths of the meatus urinarius. At the external os the incision is made deep into the uterine musculature and up the canal for about three-quarters of an inch. The hæmorrhage from a few vaginal veins is not important, and requires no particular attention. The bladder now comes into view, and can be pushed up from the wall of the uterus simply by means of a pledget of gauze. The wall of the uterus is exposed by means of a narrow retractor, and is cut with scissors in the median line as far up as it is free from the bladder. By dragging down the cervix a further incision may be made, and thus the os internum is reached and the membranes become visible. When a few small snips are now made and the peritoneum of the vesico-uterine fold is pushed back, the body of the fœtus can readily be drawn through the opening. When the fœtus is the average size at term the incision from the os externum to its upper extremity measures from four to five inches. If the case is one of interrupted pregnancy the incision is shorter in proportion. In no case has Bumm seen any tearing of the cervix or of the peritoneum during the manipulations necessary to extract even the largest child. After the incision is

completed all forceps and instruments are removed. The regular proceeding next is to deliver by podalic version. In only two cases out of 52 have the forceps been used.

In Bumm's experience version and extraction have been the method adopted in 24 cases in the 9th and 10th months. Seven children, 29 per cent., were still-born or died within 48 hours; the rest survived. When we consider how many of the children are premature, and in how many cases the fœtal vitality is affected by the disease of the mother for which the operation had to be undertaken, it becomes apparent that the life of the child is not further endangered by hysterotomy than by ordinary version.

In primiparæ the chief difficulty arises from the narrow vagina and the perineum. It may be necessary in such cases in order to prevent lacerations to make "a deep vaginal and perineal incision." Severe hæmorrhage may result from atony of the uterus. In Bumm's experience it has been occasionally necessary to introduce a tampon into the uterus in order to control the hæmorrhage.

The final step in the operation is the suturing of the wound in the cervix. The uterus is gradually drawn down and the parts exposed by specula until the highest point of the incision is reached. The wound in the uterus is closed by means of separate catgut sutures, and the median vaginal incision by a running continuous catgut suture. This completes the operation.

When the operation has been performed before any pains have had time to thin out the cervix, it is as well to place a glass drainage-tube in the cervical canal, and to leave it for a few days.

Bumm and his assistants have operated in 52 cases with a mortality of 23 per cent. The most of the deaths were from eclampsia and other diseases for which the operation was resorted to. Three patients died from sepsis produced before admission to the hospital. Only one patient died from infection of the wound, and she was suffering from pyelonephritis. From the septic cases the inference is drawn that, like Cæsarean section, the operation involves too great danger when the patient is already infected.

The danger of hæmorrhage from the wound is very slight when the incision is made in the median line.

At Bumm's request Herr v. Bardeleben made observations upon 8 cases long after the operation and he found that the wound had healed completely, or almost completely, in all except one in which there remained a large split confined to the portio.

In formulating an estimate of the value of hysterotomy Bumm says: The value of the operation and the step in advance which

marks its introduction into obstetrics, lies in this, that it places us in a position to complete the process of emptying the uterus whether in pregnancy or during labour in an exact surgical manner without loss of time. By no other proceeding hitherto at our command can so much be accomplished. The Bossi dilator is not suitable for dealing with the intact cervix; it is impossible in using that instrument to avoid lacerations and hæmorrhage to a disagreeable extent. Other objections are also raised to it.

There are numerous complications of pregnancy and parturition for which hysterotomy is the best treatment. The most important of these is eclampsia. In 52 cases only 25 of eclampsia occurred; they were all operated on without delay with a mortality of 20 per cent. Other conditions calling for operation were nephritis of pregnancy, and valvular disease of the heart, placenta prævia, and contracted pelvis, in which the operation was undertaken in place of induction of premature labour. Among the rarer indications were volvulus, chorea, cicatricial stenosis of the cervix, and prolapse of the cord. In cases of sepsis and septic processes the results of the operation have been so bad that they point to sepsis as a contraindication.

Although vaginal hysterotomy is not a difficult operation it requires a certain experience in the *technique* of gynæcological work, and sufficient assistance. It can consequently never become an ordinary operation for the general practitioner. In opposition to the opinion of Leopold, Bumm does not believe that the various methods of dilatation, especially those requiring metal dilators on the principle of Bossi's, can ever become safe in private practice. The use of the Bossi dilator is not simple, and it is too dangerous. In private practice, when delivery is urgently demanded, and the os is not sufficiently dilated, the best proceeding is combined podalic version and dilatation by traction on the breech.

The discussion which followed the introductory addresses brought out in a striking manner the great difference of opinion which prevails among the most experienced and distinguished teachers of obstetrics in Germany.

Schæffer, of Heidelberg, spoke of the effectiveness of the pains resulting from the various methods of artificial dilatation of the gravid uterus. Without actual pains of the fundus and simultaneous vasomotor loosening of the tissues of the portio there can be no dilatation of the os internum sufficient for the completion of labour. It is not easy to draw any practical conclusions from Herr Schæffer's

address. He is in favour of bougies, but he does not say what he would do in cases of abortion or in urgent complications at or near term.

Hannes, of Breslau, spoke in favour of the balloon method of hystereurysis, and gave the results obtained during the last ten years at the Breslau Lying-in Hospital. The balloon or bag employed there is sausage-shaped, and is passed entirely empty just within the narrowest portion of the cervix. It was employed in 68 cases in order to induce labour, hardly ever before the 34th week. On the average the pains came on in 85 minutes, and labour was completed in 22·8 hours. In 81 per cent. the children were born alive. There was no maternal death from causes connected with the operation. Adding the cases of placenta prævia, there were 4 deaths among 97 patients.

Bürger, of Vienna, gave an account of the results obtained in Schauta's clinic by the balloon method which is there preferred. He claims for it several advantages: it does not produce lacerations; it is easily carried out and without inflicting injury; there is as little danger of infection as with any other method; it is not a proceeding to be reserved for specialists, but it belongs to the class of operations which can be performed in general practice. The results obtained in cases of eclampsia, viz., a mortality of 20 per cent., do not appear to be specially satisfactory.

v. Bardeleben, of Berlin, gave his experiences of incision, dilatation, and laceration, in artificial induction and completion of labour. From his support of Bumm in recent publications it was to be expected that he would advocate the method of incision. His argument and conclusions were much the same as those of Bumm in his introductory address. Still of v. Bardeleben it could not be said by Bossi and his supporters, as it was said of Bumm, that he was not qualified to give an opinion, as he had never used the dilator. According to v. Bardeleben, both the Bossi dilator and the balloons take much longer time than is usually alleged, and do vastly more harm than their advocates admit.

Leopold Meyer, of Copenhagen, agreed with Leopold upon the whole, but his own experience at the Lying-in Hospital of Copenhagen did not support Bossi's method out and out. He had used the dilator in 55 cases, of which 27 were cases of entirely undilated cervix. He had seen a tendency to spasmodic contraction after rapid dilatation. The lacerations which he observed were not produced by the instrument, but by the proceedings necessary to complete the labour! It is the misuse of the instrument that is dangerous. Meyer

also advocates the employment of small non-elastic balloons for bringing on premature labour.

Schatz, of Rostock, has used an instrument of his own invention for five-and-twenty years; he has employed it in 4,000 cases, and is quite satisfied with it. He only regrets that the surgical instrument-makers find his "Metroikter" too difficult to reproduce. Schatz reviewed all the other methods of dilatation without approval.

Aubert, Geneva, demonstrated the new dilator of de Seigneux. He claimed for it all the advantages in effecting rapid completion of labour afforded by the Bossi instrument without its disadvantages.

Heinricius, of Helsingfors, confined his remarks to the artificial dilatation of the os uteri during labour. He said he employed in order to hasten labour the bag of Champetier de Ribes or the intra-uterine *écarteur* of Tarnier. In very urgent cases he used the Bossi dilator, usually in eclampsia. In 2 out of 21 cases there was excessive hæmorrhage from lacerations, and sutures were required. One case of accidental hæmorrhage ended fatally.

Zangemeister, of Königsberg, selected "Injuries to the cervix after dilatation operations" as the subject of his remarks, and reported on behalf of Hammerschlag the results obtained at the Königsberg hospital. Bossi's dilator was used in 25 cases, incision in 30 cases. In the blunt methods of dilatation laceration occurred in one-fourth of the cases; with Bossi in one-half. He considered the danger of laceration from the use of Bossi's instrument very great, but the danger from infection slight. Zangemeister did not think Bossi's instrument suitable for private practice: it must be reserved for the use of specialists.

Poten, of Hanover, had employed the original Bossi instrument in 27 cases. He required one hour for the operation. Two patients died from eclampsia, one from the operation. He believed that the instrument would find its way into private practice.

Pfannenstiel, of Giessen, spoke in favour of the balloon treatment, in cases of induction and placenta prævia, from which he had obtained very good results. In urgent cases he preferred incision to dilatation by Bossi's instrument. *Accouchement forcé* is too frequently resorted to.

Olshausen, of Berlin, employed all three methods of dilatation. The process of dilatation should be much slower than is the usual practice. It may take an hour in some cases. He preferred Frommer's instrument with eight prongs, and thought it was suitable for private practice.

v. Herff, of Basel, employs tamponade and metal dilators. With

regard to Bossi, he prefers the four-pronged to the eight-pronged instrument. In urgent cases incision is the best method.

Fehling, of Strassburg, drew a clear distinction between early cases with the os undilated, and completion of dilatation during labour. In the early cases he preferred to begin with Hegar's instrument and complete the dilatation by laminaria tents. For later cases he employed the balloon treatment. From "vaginal Cæsarean section" his mortality had been 20 per cent. The lacerations seen after balloon treatment are the effects of version and extraction.

Küstner, of Breslau, thought that all proceedings having for their object the dilatation of the cervix uteri should, as far as possible, imitate the natural process. He would, therefore, recommend balloon dilatation and puncture of the membranes. In cases of abortion he would puncture the membranes and wait. If necessary, the uterus might be cleared out by operation.

Latzko, of Vienna, considered the laminaria tent indispensable, *unentbehrlich*, and advised dry sterilisation. There were few cases, except hydramnios, in which pucture of the membranes was required.

Everke, of Bochum, as to some extent a general practitioner, resorted to version and extraction in placenta prævia. He considered the danger of infection considerably increased by Bossi's method and by the use of balloons. In eclampsia he preferred hysterotomy. This last statement is important testimony in support of Bumm's treatment, inasmuch as Everke has had a large experience of conservative Cæsarean section in cases of eclampsia.

Veit, of Halle, speaking of eclampsia, expressed a decided preference for surgical treatment. He had treated 33 cases, with only one death.

Krönig, of Halle, was entirely in favour of hysterotomy in urgent cases, even when the life of the child only was in question. He had never observed any undesirable cicatrisation. Especially in eclampsia he would operate with the least possible delay.

Bröse, of Berlin, spoke in favour of laminaria tents, supplemented when necessary by the use of metal dilators.

Bokelmann, of Berlin, thought the Bossi dilator was an instrument "suited only to the wants of the inexperienced." The eminent specialist did not require it. In the hands of the general practitioner midwifery should not be surgical.

Döderlein, of Tübingen, took part in the discussion from the bacteriologist's point of view, consequently he preferred the rapid surgical methods. However thoroughly the foreign bodies, such as

bougies, laminaria tents, balloons, and iodoform gauze might be disinfected there was always a danger of introducing pathogenic micro-organisms. This danger was specially great in case of abortion after the death of the embryo. Consequently all proceedings should be as rapid as possible. All protracted abortions are septic. Döderlein referred with approval in support of his own views to the work of Hellendall in his Clinic at Tübingen just published ("Bakteriologische Beiträge zur puerperalen Wundinfection," *Hegar's Beiträge*, Bd. x.).

In this summary of the discussion at Kiel we have the essential facts of German professional opinion. It should however be kept in mind that the point of view is almost exclusively that of the specialists in obstetrics, the teachers of midwifery in the medical schools, and the members of the staffs of the best equipped Lying-in Hospitals in Europe. The contributions to our knowledge of Obstetrics contained in the various addresses bring down to the present time all that can be said on the advantages of the various methods of rapidly dilating the pregnant uterus.

This subject has received a large amount of attention in recent years, and much has been said and written on it both in Europe and America. The history and literature of the various methods of rapid delivery have been fully yet concisely given by Dr. W. E. Fothergill in this JOURNAL (October, 1904), and in the *Practitioner* (April, 1905). A survey of the various discussions which have taken place, and of the many contributions to medical journals in Europe and America, impresses us with the fact that there is a widely spread desire for improvements in our methods and appliances. This desire could not have arisen except from the conviction resulting from numerous unhappy experiences that there is much room for improvement.

Another feature of the discussions and contributions is a certain want of reality, and the absence of general professional interest in the experiences recorded and the proposals for improving upon the past and presently prevailing methods. After all it is an infinitely small proportion of the human race that are ushered into the world in a perfectly equipped lying-in hospital under the supervision of an obstetric specialist, consequently operations which are too difficult or dangerous to be performed by general practitioners in private houses have only a sort of academic interest for the profession as a whole and are realities for only a small professional caste.

Leaving the advocates of the various operations requiring special

assistance and appliances to neutralise one another's influence by alarming the ordinary practical men, we may set aside incisions according to Bumm, and disregard the various rapid dilators constructed on the Bossi principle. Most medical practitioners not attached to lying-in hospitals will probably agree with Zinke (*Amer. Journal of Obstet.*, November, 1904) that the Bossi and similar dilators are dangerous instruments which will ultimately reach their proper destiny in the obstetric scrap heap. Too little is heard from the advocates of surgical methods about the unprepared condition of the vagina and perineum and the resulting injuries and dangers. No more striking condemnation of the Bossi dilator has ever been written than that contained in a well illustrated article by one of Leopold's assistants, whose intention was to advocate its use. He depicts some ghastly injuries to the cervix as extensive as those which we so often recognise as resulting from the premature application of the forceps.

Digital or manual dilatation all men with a sense of responsibility will agree in condemning. It is perhaps the most dangerous method of all, even when the os is dilatable. The effects which may be reasonably expected are laceration, hæmorrhage, and sepsis. What then are we to do? What mechanical contrivances are we to employ? It all depends on the object in view, and the stage of pregnancy or labour in the individual case. Unfortunately, in all discussions, and in some systematic articles contributed to journals, the various conditions are a good deal mixed up. If our intention is to bring on labour and to empty the uterus, our method must obviously depend upon the stage of pregnancy. Take a typical case in the early stage, the induction of abortion because of threatened death from hyperemesis. We have the choice of rapid dilatation by graduated bougies on the Hegar principle or by laminaria tents. There is no time now for the discussion of the merits of the sea-tangle, but I would like to express my conviction that on physiological and practical grounds the use of laminaria in such cases is absolutely the best possible treatment. The tent, while dilating the cervix, is also stimulating the uterus to normal contractions or pains. Slowness of action, instead of being considered a drawback, should be recognised as one of its chief advantages. I am quite aware of the casual objection that the laminaria tent may produce sepsis. Laminaria tents may be more easily rendered aseptic than steel instruments or silk balloons. They might be saturated with germicide fluids and made positively destroyers of bacteria. It is true that a good deal may be done to improve them in many ways,

for no important modification has been introduced in their manufacture for more than fifty years.

In the later period of pregnancy, for example, in a case of slightly contracted pelvis, how are we to proceed so as most easily and safely to induce premature labour? The practice most in vogue in this country is dangerous to a considerable degree. The medical practitioner, after more or less perfunctory cleansing of the vagina and os uteri, pushes a bougie into the uterus, and waits with a light heart for the result. It is an uncertain as well as dangerous proceeding. It would be a great improvement to begin dilatation and stimulation to contraction by means of laminaria tents of suitable length and calibre, and to continue if necessary the process of induction by sausage-shaped silk bags or balloons. The non-elastic bag is a great improvement on the old india-rubber article, which could be used with comparative safety only once. The silk bag can be readily made as aseptic as the laminaria or steel dilator, and by gentle patient manipulation the danger of laceration can be reduced to the vanishing point.

These appear to be the methods of dilating the cervix during pregnancy best suited to general practice. For dealing with emergencies during labour at or near full term the medical practitioner will look in vain to the recent discussion or to the published contributions of eminent specialisits during the last few years for light and guidance.

Double Ovarian Cystoma and Uterus affected with Melanosarcoma; whole Abdominal and Thoracic Viscera studded with innumerable Melanosarcomatous Tumours.*

By G. Balfour Marshall, M.D., F.F.P.S.G., *Gynæcologist, Glasgow Royal Infirmary; Lecturer on Obstetrics and Gynæcology, Western Medical School, Glasgow.*

S. M'L., aged 30, was admitted to the Glasgow Royal Infirmary on June 30th, 1904, complaining of an abdominal swelling and gastro-intestinal symptoms. Her health seemed to have been good till November, 1903, when she began to suffer from epigastric pain with a feeling of nausea after taking food. This continued, accompanied by such a progressive loss of strength that about the middle of March, 1904, she was compelled to give up her daily work. In May she had, in addition, attacks of vomiting, which persisted for a month, when, as a result of treatment, some improvement took place. This improvement, however, did not last long, as during the two weeks prior to admission to hospital her general condition became worse; she felt very weak, was fevered, and had severe sweatings. Although on admission the abdomen was found markedly distended by a large cystic tumour, yet the patient had only been conscious of its presence for a few weeks. She had also suffered from abdominal pain, which, however, was never severe. Menstruation, which began at the age of 14, had always been regular, of the four week type, lasting three or four days, and accompanied by sacralgia, which lately had become more severe. During the inter-menstrual periods there was leucorrhœa. Since March she had suffered from increased frequency of micturition, and the bowels were habitually costive.

On admission to hospital the patient looked ill and anæmic, with a temperature of 101·6° F., pulse 112, and respirations 22. The tongue was dry and furred. Both feet and legs showed slight œdema.

Examination. The abdomen was distended in its lower half to the size of a six months' pregnancy, and showed a faint linea nigra as high as the umbilicus. Percussion elicited dulness extending

* Read at a meeting of the Glasgow Obstetrical and Gynæcological Society, January 25th, 1905.

upwards for six and a half inches from the symphysis pubis to the level of the umbilicus, and laterally for three inches from the middle line towards each flank, the tumour being six inches broad. A noticeable feature in connection with percussion was the variation in the area of dulness at repeated examinations. There was considerable tympanites, and the bowels overlapped the right side of the tumour to a varying extent, so that at one of the examinations the area of dulness, even on deep percussion, was only three inches broad. By palpation a tense ovoid cystic tumour could be felt arising from the pelvis, and resembling a six months' pregnant uterus, both in size and shape. Auscultation was negative.

Vaginal Examination. The vulva and vagina were those of a virgin. The cervix was low down, and pushed close to the symphysis pubis by a cystic tumour, which filled the whole pelvis, and could not be moved. Bimanually, the uterus was found pushed against the anterior abdominal wall, a little to the right of the middle line.

The tumour was diagnosed as a large multilocular cystoma, but from which ovary could not be determined. Subsequent *post-mortem* examination, however, proved that both ovaries were affected, one cystoma overlapping the other in such a manner as to make them apparently one tumour. It was evident that the ovarian tumour could not account for the general condition of the patient, so that operation was out of the question.

There was at first a suspicion of typhoid, rendered more so by the presence of several rose-coloured spots on the abdomen and some enlargement of the spleen. The tongue, however, though dry and furred, was not like that of typhoid, and the bowels when moved by an enema, following on a dose of castor oil, showed a stool, which, though fœtid, was not suggestive of this fever. Widal's reaction was also negative. In view of the possibility of typhoid the urine was tested for Ehrlich's diazo-reaction, but also with negative results. Simon (quoted in Butler's *Diagnostics of Internal Medicine*) says that if this diazo-reaction is not found in the second or third week of a supposed case of typhoid, it is probable either that the case is very mild or that the diagnosis is wrong. A positive reaction, besides being seen in the majority of enterics, is also obtained in various forms of tuberculous disease, septic conditions, etc.

The urine was acid, sp. gr. 1030, with a trace of albumen, but no sugar or bile. After standing for some time exposed to the air it acquired a darkish-brown colour, not unlike what is seen after absorption of carbolic acid. At first I understood the urine was this colour when passed, and did not attach sufficient importance to it,

merely contenting myself with excluding bile and phenol. It was not till the *autopsy* revealed melanotic sarcoma that the true nature of the pigment in the urine was suspected and proved to be melanogen or melanin. V. Jaksch, in his *Clinical Diagnosis*, writes that the most sensitive test for melanogen is bromine water, which gives a yellow precipitate that gradually blackens. Another test is to add a few drops of a fairly concentrated solution of iron perchloride which causes the fluid to turn grey, and if more be added a precipitate of phosphates falls, carrying the colouring matter with it. This, again, dissolves with an excess of the solution.

The presence of melanogen in the urine, although a useful aid to diagnosis, is not always obtained in cases of melanotic sarcoma, and this pigment may be seen in large quantities in wasting diseases. At the same time, an earlier recognition of its presence might at the least have raised a suspicion as to the cause of the patient's symptoms.

From July 1st to July 4th the patient's condition got steadily worse, the temperature ranging erratically between 101° and 103° F., and the pulse from 124 to 140 per minute. On the evening of July 4th she had an attack of dyspnœa. Though nothing definite was found in the lungs on admission, examination now showed the presence of râles, especially in the left base, with slight dulness to percussion and a diminution of the respiratory sounds. Respirations were now 30 per minute.

One of the physicians saw her in consultation on the morning of the 5th, but would express no opinion as to the nature of the obscure disease. Later on in the day the patient became collapsed, the pulse-rate rising to 168, with a falling temperature, and at 9 p.m. she died without a diagnosis having been made as to the cause of her general condition.

On July 7th a *post-mortem* examination was made by Dr. Workman, with the result that the thoracic and abdominal organs were found studded with countless melanotic sarcomata of various sizes. There were no external evidences of these.

The detailed report is as follows:—

Heart. Normal in size, wall studded with small melanotic tumours.

Lungs. Voluminous, emphysematous, and studded throughout, but especially immediately beneath the pleura, with melanotic tumours of various sizes, from that of a pin head to that of a bean.

Liver. Enlarged by the presence of numerous melanotic tumour nodules, some of which are as large as a Tangerine orange (Fig. 2).

FIG. 1.

Nodule from liver
Left suprarenal gland
uterus and cystomata

FIG. 2.

Spleen. Large and soft, and has a general pigmented appearance, but no definite tumour.

Suprarenal Glands. The left appears transformed into a melanotic tumour mass about the size of a Tangerine orange (Fig. 2).

Kidneys. Show numerous small nodules under the capsule and throughout its substance (Fig. 1).

Bladder. Has a few nodules only in its wall.

Mesentery, Intestines and Omentum. Are studded with innumerable small nodules.

Lymphatic glands seem remarkably free from tumour formation. There is a multilocular cystoma of each ovary, the left one being fixed in the pelvis, while the right lies in the abdomen.

Both cystomata, as also the uterus, are studded with numerous small melanotic nodules, but one in the right cyst is the size of a walnut (Fig. 2). The cysts contain a watery brownish fluid, due to the presence of melanin, and the inner walls are deeply pigmented with the same substance.

Microscopical sections show that the cell protoplasm is first invaded, then the nucleus, when the whole cell is destroyed. Granules and needle-like crystals were seen in the sections, which may be some compound of melanin as it did not seem to depend on the staining reagent used.

As regards the seat of the primary growth it is difficult to be certain, but I am inclined to the opinion that it originated in the left supra renal gland, as this organ was completely transformed into a large tumour mass. The external surface of the body, as already stated, was entirely free from any growth or pigmented spot.

On the Secondary Operation for Complete Rupture of the Perineum.

By John Edgar, M.A., B.Sc., M.B., C.M., F.F.P.S.G., *Professor of Midwifery and Gynæcology, Anderson's College Medical School; Surgeon, Glasgow Samaritan Hospital for Women.*

In his Presidential Address, delivered on 21st June, 1905, before the Fellows of the Glasgow and Edinburgh Obstetrical Societies, Dr. Cullingworth gave a singularly lucid and able description of the mode of performing this operation, which he himself had adopted. The paper, together with six diagrams, was published in the July number of this Journal. In the course of his remarks, Dr. Cullingworth expressed the opinion that discussion on such a familiar topic ought to be helpful, as he did not think that the last word had yet been spoken on the subject. I quite agree with him in this opinion, and as the time allotted for discussion was too limited to permit a free exchange of views, I desire to adopt this method of giving the results of my experience.

For several years I tried several modes of incision and of suture, including that advocated by Dr. Cullingworth, but was not completely satisfied with any of them until two or three years ago I came to adopt the method described below. The main feature of difference between it and Dr. Cullingworth's lies in the mode of application of the sutures. If we study Plate III. in Dr. Cullingworth's paper, we see that when the sutures marked "D" are tied, the result is necessarily the formation of a spur, though it may not always be so prominent as shown in Fig. 6. It is evident that this is not normal, and runs counter to the condition, rightly emphasised by the writer himself, that the perineum should be restored "as nearly as possible to its original size and shape." In one case in which I operated by this method the resulting spur became subsequently hypertrophied and caused such annoyance to the patient that she requested a second operation for its removal. I trust I shall be able to show that the vaginal flap may be retained in such a way that no spur will result, but that, on the contrary, it will form part of a firm perineal body of as nearly as possible the normal size and shape.

The Incision and Dissection. After having the parts thoroughly scrubbed, a narrow strip of iodoform gauze, 15 inches long, with a

piece of silk thread attached to one end, is introduced into the rectum. The sides of the perineum are caught with bullet-forceps and drawn by the assistants directly towards the operator so as to stretch the recto-vaginal septum. The operator's left index-finger, protected with a thin rubber finger-stall, is then inserted, palmar surface forwards, into the rectum, and a knife, held in the right hand, is introduced slowly and carefully into the centre of the septum as far as may be necessary. This will vary according to the depth of the perineal laceration, but in all cases it must be sufficiently deep to ensure (1) a good perineal body, and (2) a sufficiency of raw surface to prevent the occurrence of a recto-vaginal fistula. When the knife has been introduced to the proper depth, it is quickly carried outwards, and then in a curve forwards to the posterior margin of the labium minus. One of the assistants then catches the vaginal flap with bullet-forceps, and the knife is re-introduced in the middle line and a similar incision made on the other side. The assistants now depress the sides of the perineum with the two lateral forceps and raise the vaginal flap with the third pair, and the operator quickly completes the dissection. The whole process should not take more than about a minute.*

After withdrawing the finger from the rectum and stripping off the finger-stall with a piece of sterilised gauze, two short cuts are made backwards from the extremities of the transverse portion of the incision to the outer edge of the two dimples which mark the divided ends of the sphincter ani, and the portions of skin between the two incisions and the edge of the rectal mucous membrane are dissected off. In this way the ends of the sphincter are exposed. Like Dr. Cullingworth, I have never found it necessary to dissect out the ends of the muscle. The volsellum forceps are then removed.

The advantages of this method of incision and dissection are:—(1) The rapidity with which it is effected; (2) the freedom from risk of perforating the rectum or vagina; (3) the protection of the finger by the rubber finger-stall: this is important in view of the subsequent manipulations; (4) the certainty of securing a sufficiently large area of raw surface and thus ensuring union of the whole area and the formation of a good perineal body.

Suturing the resulting raw surface. The first suture to be inserted

* For the last nine or ten years I have adopted the same method of incision and dissection in the performance of the operation of posterior colporrhaphy, except that, of course, the knife is not inserted midway between the rectum and the vagina, but immediately beneath the vaginal mucous membrane, and the vaginal flap is completely removed.

is one in the centre of the edge of the vaginal flap. This closes the gap caused by the original tear,and it serves as a tractor by means of which one of the assistants keeps the vaginal flap raised forward during the application of the other sutures. Rectal catgut sutures are then inserted in the manner described by Dr. Cullingworth, and finally the perineal sutures are passed. It is best to tie each rectal suture before inserting the next, but the perineal sutures should be left untied until all have been passed.

As a rule, four or five perineal sutures are sufficient, though sometimes one or two superficial ones may be required between the deep ones.

1. A short, stout, curved needle, armed with silkworm gut, and held in a needle-holder, is inserted on the patient's left side at a point in Fig. 5 indicated by the lowest of the four sutures marked "D," and, curving it first outwards and then inwards, so as to get a good hold of the levator ani, it is brought out on the raw surface at a point in front of the fifth or sixth dot of the dotted line representing Dr. Cullingworth's buried suture. It is then made to traverse horizontally the middle of the raw portion of the vaginal flap at a level corresponding with the second of the sutures marked "D," and finally it is passed through the right side of the perineum in the same way as on the left side, but, of course, in the reverse direction.

2. The next suture is passed in the same fashion through the sides of the perineum at the level marked by the uppermost of the four sutures marked "C," and including the raw surface of the vaginal flap at the level of the third of the "D" sutures.

3. The third suture, introduced at the point marked by the second "C" suture, after emerging well down the side of the wound, is passed through the tissues at the bottom of the wound and then inserted and brought out at corresponding points on the right side.

4. Finally, a suture is passed from behind forwards through the left extremity of the divided sphincter ani, and in the reverse direction through the right extremity in the manner shown by the lowest suture in Fig. 4.

5. If necessary, a fifth suture is passed between the last two.

These sutures should now be tied, lowest first and uppermost last. The surface should be mopped out immediately before tying each suture, and then the vagina should be thoroughly douched, the rectal tampon removed and the sutures brought together and tied in a bunch.

After-treatment. No dressings should be used; they are

unnecessary, and should they become soaked with discharges, they may prove a source of mischief. Like Dr. Cullingworth, I never order vaginal douching unless it is indicated by the presence of a septic discharge, which is practically never the case. As fresh urine is sterile, I forbid the use of a catheter unless absolutely necessary. In this way the risk of setting up cystitis is obviated. The nurse is simply instructed to run some antiseptic solution over the parts immediately after micturition and defæcation. The bowels are moved on the third morning (48 hours) after the operation by means of a dose of castor oil, and thereafter every day or every second day. I agree with Dr. Cullingworth in protesting against the system of keeping the bowels unopened for eight or ten days, a method still practised by some operators. The sutures are removed, as a rule, on the twelfth day.

The Germ-Content of the Uterus and Vagina during the Normal Puerperium.*

By James Brownlee, M.D., Stockton-on-Tees.

The study of the bacteriology of the genital passages may be said to have begun in 1887, with the publication of Gönner's article,[1] in which he came to the conclusion that auto-infection of the parturient woman is impossible and that puerperal septic troubles must be attributed to imperfect asepsis on the part of the lying-in woman's attendant, medical or otherwise.

Since then obstetricians have been divided into two camps, the one party upholding the views just mentioned, and hence advocating the strictly aseptic conduct of labour, the other declaring that auto-infection is possible, and that in conducting a labour one must be antiseptic. Very numerous and in many cases elaborate investigations have been undertaken with a view to settling the question. And although the general trend of opinion is rightly, I think, toward the former, *i.e.*, the aseptic view of the case, we are far from reaching unanimity on the subject.

In proceeding to a somewhat hurried resumé of the literature of the subject, I take, as already indicated, Gönner as the real originator of the discussion.

He examined the secretion from the cervix and vagina of 31 healthy, pregnant women. Though finding immense numbers of bacilli and cocci both by microscopic and culture methods, these proved to be non-pathogenic. Hence his conclusion as to the impossibility of auto-infection, and as to the advisability of refraining from prophylactic douching and other active antiseptic precautions.

Very soon afterwards Döderlein[3] was in the field with a series of observations on which he founded an exactly contrary theory, and advocated strict disinfection of the vagina during and before labour.

He examined secretion both from the cavity of the uterus and from the vagina, and while the uterine secretions were uniformly sterile, the vaginal lochia contained various species of organisms, and not infrequently pyogenic streptococci and staphylococci.

* Read at a Meeting of the Obstetrical Society of Edinburgh, July, 1905.

In 1892 he returned to the subject.[4] On this occasion he divided the vaginal secretions of 195 pregnant women into two types, "normal" and "pathological." "Normal" secretion he described as a thick, crumbly, dry material with an acid reaction and showing microscopically epithelial cells, a large number of long, tolerably thick bacilli, and a few yeast cells. "Pathological" secretion is more fluid and purulent, less acid, or sometimes neutral or alkaline, and microscopically shows many leucocytes as well as epithelial cells, and a great variety of bacteria, especially cocci and short bacilli. He concluded that auto-infeetion was impossible in "normal," possible in "pathological" cases.

In 1895,[5] he had so far modified his views that he advocated the restriction of antiseptic douching to those cases only in which operative interference was necessary.

Winter,[7] in 1888, found the normal uterine cavity uniformly germ-free. In 20 women, 10 of whom were pregnant, he was able to demonstrate in the secretion from the cervix and vagina 27 varieties of bacteria, including streptococci and all varieties of staphylococci. Hence he was an auto-infectionist.

In the same year v. Ott,[8] from an examination of the lochia of 9 puerperal women, concluded that not only the uterus but the upper part of the vagina also was germ-free in normal cases.

In 1888 also Czerniewski[9] published a series of 57 cases of fever-free puerperal women, in 56 of whom the uterine lochia gave negative results.

Two years later, Thomen[10] examined 7 pregnant women and found neither staphylococci nor streptococci. Among 13 other cases examined within 5 days of labour, he found several with streptococci either in the uterus or vagina or both.

About the same time Steffeck,[11] from an investigation of the secretions of 29 pregnant women who had not been vaginally examined, concluded that in such cases the bacteria found are pathogenic.

Burguburu,[12] in 1892, decided that pathogenic bacteria, though diminished in virulence, do frequently occur in the vagina of pregnant women.

In the same year Maslowsky[13] published results, which led him to the same conclusions as Burguburu.

Witte,[14] in 1893, confirmed these results with regard to "pathological" secretions. In "normal" cases he found no pathogenic bacteria.

Whitridge Williams's first results, published in the same year,

"confirmed in a general way Döderlein's conclusions." Later, however (in 1898), the same observer,[23] struck by Krönig's results and remarks on imperfections in technique of most previous investigations, repeated his observations on 92 pregnant women, with results which caused him entirely to change his views on the subject, and to become a firm believer in the aseptic view of the question.

Among other conclusions he comes to are these:—

(*a*) That auto-infection is impossible; hence prophylactic douching is useless and harmful.

(*b*) Vaginal examinations are dangerous.

(*c*) Abdominal examination must largely replace vaginal examination.

v. Franque,[15] in 1893, in 10 normal cases found the uterus germ-free 8 times. In the same year Stroganoff[16] examined the vaginal secretion of 11 pregnant women, and found 9 cases sterile. He concluded that the vaginal secretion has bactericidal properties, and made an experiment with staphylococcus albus, which seemed to prove this theory.

Burckhardt,[17] in 1894, from a clinical study of 116 pregnant women decided that the difference between "normal" and "pathological" secretion is very pronounced, and that the danger of illness during the puerperium is distinctly greater with the latter than with the former.

Early in the same year Krönig[18] came to the definite conclusion that the vagina of every pregnant woman who has not been examined, is aseptic. Some months later he investigated the anti-bacterial action of the vaginal secretion, and concluded that antiseptic vaginal douches are harmful by weakening the normal antiseptic power of the secretion.

In 1897[19] the same writer returned to the subject in that important work Menge and Krönig's *Bakteriologie des Weiblichen Genitalkanales*. Here he once more asserts that the uterus normally is germ-free. He further declares that every case with germs in the uterus has, in consequence, either general disturbance or local inflammation, and that the normal endometrium of the puerperal uterus has strong anti-bacterial properties. As regards gonococci, of 50 puerperal women showing these organisms, 41 had symptoms of fever, but as a rule much less acute than ordinary septicæmias due to streptococci.

Walthard,[20] in 1895, from 100 cases, declared himself strongly in favour of the possibility of auto-infection, as also did Vahle[21] in 1896. Kottman,[22] in 1898, joined the same side.

About the same time Burckhardt[25] declared that the cavity of the uterus is germ-free at the beginning of the puerperium, but by the 11th or 12th day he had 24 positive results out of 30 cases examined.

In 1889 Hallé,[26] one of the few French obstetricians who have written on the subject, found numerous bacteria in the secretions from the vulva, vagina and cervix of normal women.

Stahler and Winckler[27] in the same year concluded that in the great majority of cases with a fever-free puerperium the uterus is germ-free; but that it is possible for living saprophytic organisms to be found there under normal conditions without their products having any deleterious effects.

Next year[28] the same observers published a series of observations on the vaginal secretion of pregnant women. They express the opinion that "pathological" vaginal secretions frequently contain facultative anærobic streptococci of more or less diminished virulence.

The observations of Bensis[30] were made about the same time on the secretions obtained from the fundus and introitus vaginæ of 15 pregnant women. The former were practically free from pathogenic bacteria. The latter were much less so.

Still, in 1900, Franz[29] set forth the view that slight fever in the puerperium is in most cases due to saprophytes obtaining entrance to the uterus, and that this, combined with some interference with the escape of the lochia, gives rise to the disturbance. In 10 normal puerperæ he found the uterus germ-containing.

In 1901 three articles appeared under the names of Schauenstein, Vogel and Wormser.

Wormser[31] got a positive result in 84 per cent. of his cases in normal puerperal women from the 12th to the 18th days. On the other hand he considers it pathological if, in the first week of the puerperium, germs are found in such circumstances.

Schauenstein[33] raises the questions:—

1. Is the entire secretion-content of the Döderlein-tube equivalent in a bacteriological sense to that part in the middle of the tube, or not?

2. What influence has the quantity of inoculated material on the culture results?

3. Is the uterine cavity of a normal puerperal woman germ-free or not?

The first question he answers in the negative. In regard to the second he found that the more material he used, the more positive results he obtained. To the third his answer was that in 64 per cent. the uterus was germ-containing.

Vogel[32] got positive results as regards pathogenic bacteria in the uterine lochia in a large percentage of cases, in fever-free women; but more in the later than in the earlier days of the puerperium.

Franz,[35] in 1902 controverts Schauenstein's conclusions about the relative germ-content of the different parts of the Döderlein tube. He advocates the use of as large a quantity of secretion as possible, at least 1 c.m.

In the same year Bergholm[36] examined the vaginal secretion of 40 pregnant women, and found practically no pathogenic bacteria. The contributions of Marx and Stolz bring the literature practically up to date.

Marx[37] decides that the uterus during the first six days of labour is normally a sterile organ; and that auto-infection is practically impossible from a normal vagina, which can be diagnosed from the clear, sticky, acid secretion. When, however, the vaginal secretion is alkaline and purulent, indicating a probable gonorrhœa, active antiseptic measures are necessary.

Stolz's[38] investigation had reference partly to the question of the effect of vaginal examination before and during labour, partly to the comparative results on the 4th and 9th days. As regards the first question, his results would seem to indicate that vaginal examination makes little or no difference. For the rest he finds that germs are more numerous in the vagina of puerperal than of pregnant women. On the other hand there are fewer bacteria in the lochia on the 9th than on the 4th day.

My own series of cases consisted of 20 normal puerperal women, the specimens being obtained on days varying from the 2nd to the 12th. The result of the examinations was that although no single specimen gave negative results throughout, yet the 37 uterine specimens showed only 3, in two patients, in which a pathogenic organism, viz., the gonococcus, was present, and the 42 vaginal specimens only 5, in which such organisms occurred, viz., gonococcus twice, bacillus coli communis and staphylococcus pyogenes aureus once (the last being almost certainly a contamination).

Of the cases with gonococci, one showed a maximum temperature of 98·4°F., the other 99°F. The case with staphylococcus pyogenes aureus had an absolutely normal temperature throughout, while the case in which bacillus coli was noted was also practically normal throughout. The other organisms noted were cocci and bacilli of various sizes, the bacilli being rather more common, and in many cases showing spores and involution forms. Most grew both anaërobically and aërobically. No obligatory anaërobes were noted.

These results notify, I think, my conclusion that the lochia of normal puerperal women only exceptionally contain organisms capable of giving rise to puerperal septicæmia. That they do not contain organisms which may on occasion give rise to slight fever, I am not prepared to say.

In the perusal of the previous pages, perhaps the most striking feature is the diametrical opposition of so many of the results. In attempting to account for this, one must remember (1) the differences of technique, (2) the times at which the specimens were obtained, (3) the amount of secretion used for examination, etc. Most important of all I consider the question of technique, and I must now proceed to discuss this at some length.

Vaginal Secretion.

As regards vaginal secretion Williams[23] [24] following Krönig, lays great stress on the fallacy originating from the use of a speculum. This in some form or other was done by Winter, Steffeck, Maslowsky, Stahler-Winckler (Simon's), Thomen, Vahle (Sina's), Döderlein, Witte, Stroganoff, Burckhardt, Walthard and Stolz, either porcelain or glass cylindrical specula being used. The secretion was then taken with either a curette, a tube, a platinum loop or a spatula. Williams, in 1893, used a speculum. In 1898 he discarded it for a Menge's tube. This is a small double metal tube, the outer part of which has a fenestrum towards the end, which fenestrum can be closed at will by the inner tube. The instrument is introduced into the vagina with the fenestrum closed, the labia being held apart, so that contamination from them or the hymen can easily be avoided. The fenestrum having been opened, secretion is obtained by imparting a twisting movement to the instrument, which is then carefully withdrawn, the fenestrum having been again closed. (Kottmann's special apparatus is quite as open to objection as any speculum). Burguburu used a pipette to suck up the secretion, and Krönig did the same in one series, but used a platinum loop in the other. Bensis and Bergholm used a Menge's tube. My own apparatus was a glass tube of about 5 mm. diameter, attached to an aspirating syringe, and I found that by having the labia held well apart by an assistant, I could introduce it without chance of contamination from the vulva or hymen.

The careful use of a platinum loop, a pipette, or a Menge's tube should, I think, give equally accurate results.

Williams' convincing demonstration of the possibility of contamination from the use of a speculum is confirmed by the fact that

as a general rule those observers who used a speculum got positive results as regards pathogenic bacteria, those who adopted other methods mainly negative results.

The organisms generally found by Williams, Krönig, Bergholm, etc., were non-pathogenic cocci and bacilli, especially the latter, of very variable shape and size, and different capacities for growth on aërobic and anaërobic media. Bergholm, for instance, mentions 10 different varieties, practically all non-pathogenic. Williams has a still larger number of slightly varying types, the only one with any claim to a definite identity being the bacillus vaginæ of Döderlein.

In my own series of vaginal specimens I was able to distinguish five distinct forms of organisms, including yeast, different from the ordinary pyogenic types. Yeast has been noted by several observers, notably Krönig and Williams. Krönig also mentions the oïdium albicans as an occasional inhabitant of the vagina.

Further discrepancies in results might be sought for in the different media used. A number, especially of the earlier investigators, for instance, took no account of anaërobes, but on the whole I do not think that much can be made of this point.

More important, perhaps, will be found the difference in sexual and social hygiene of the patients. But this is matter on which fuller information is necessary.

The question of the quality of the discharge as "normal" or "pathological" in Döderlein's sense, has received a great deal of attention. Here, too, the evidence is very conflicting, and perhaps we shall come nearest to the truth, if, while admitting that it may be possible to distinguish two distinct types of secretion, we agree with Krönig in saying that it is of no importance to do so.

As to the influence of the time at which the secretion is obtained, a similar variety of opinion occurs. Döderlein gives a table of statistics which seem to prove that this is of no consequence. On the other hand Burckhardt, Wormser, Marx and others are of quite another opinion.

Uterine Lochia.

With regard to uterine secretions the diversity of opinion is quite as great, and may be attributed more or less to the same causes.

As regards technique, Döderlein's method of displaying the cervix with a speculum, drawing it down with a vulsellum, wiping it dry with a sterile swab, then introducing a glass tube, bent to suit the uterine curve, and withdrawing the secretion by suction with a

syringe, seems on the whole the least open to objection. It is comparatively easy to do aseptically, is practically free from danger to the patient, and it almost invariably enables one to obtain a plentiful supply of the secretion. This was the method which I adopted throughout my series of cases. My results, however, are very far from coinciding with those of Döderlein, in spite of the fact that the media used were like the technique, practically the same. The difference can, however, be explained at least in part, by the fact that I considered even a single colony a positive result, where Döderlein, like a good many other observers, *e.g.*, Wormser and Franz, fixed a considerably higher limit in this respect.

Among others who used a tube like Döderlein's were Krönig, Thomen, Schauenstein, Wormser, Franz, Vogel and Marx. Of these Schauenstein, perhaps the most elaborately careful of all, has almost the highest positive find of pyogenic bacteria, viz., 64 per cent. Wormser, who had 84 per cent., he thinks to have used too much secretion. Döderlein, on the other hand, he considers to have used too little, and in this he professes to find a probable explanation. He himself only used secretion from the middle of the Döderlein tube, a proceeding the wisdom of which I think very obvious. Marx's limitations in regard to the media used nullify his results to a large extent. Von Ott, and Czerniewsky were too vigorously antiseptic in their precautions, as also, though to a less extent, was v. Franqué. Stahler-Winkler introduced a speculum directly into the uterus, a proceeding surely fraught with danger to the patient and obviously open to criticism technically.

As to other causes of differences of opinion such as the time at which the secretion is obtained, my remarks under the head of vaginal secretions might be repeated almost verbatim.

The question of real importance is, however, not so much whether or not the uterine cavity is absolutely sterile in the normal puerperium, but does it contain pyogenic cocci of any sort which could produce puerperal septicæmia? Burckhardt, Vogel, Wormser and Marx agree in a sort of middle opinion, holding that in the early days of the puerperium the uterus is germ-free, while later it is not, and may contain pyogenic cocci, without, however, giving any clinical evidence of their presence. Franz and Stolz are on the positive side throughout, the latter rather reversing the opinion of the observers just mentioned.

Krönig, on the other hand, declares that the presence of pyogenic organisms in the uterus is invariably accompanied by a rise of temperature or some other disturbance. Von Ott, Czerniewski, and

v. Franqué are on the same side, though as already hinted their opinions do not carry nearly the same weight as Krönig's.

As regards my own results, I would like to bring one point out here. It is that in the great majority of the cases the growths on the culture media were very much more profuse in the case of vaginal than uterine specimens. These, of course, could be to some extent explained by the relatively larger number of bacteria present in the vagina. But in many cases it was quite evident from the direct films that there was as great a bacterial density in the one as in the other, and yet the results were as stated. Is there something in the different secretions to account for the variation, or is there, as Krönig suggests, an anti-bacterial power in the normal puerperal endometrium?

To such subsidiary questions as the effect of duration of labour, or its various stages, the number of the labour, etc., I could not, from my small selection of cases, presume to generalise. Nor do the results of many of the above writers help us, so hopelessly at variance are they. On one point, however, there is unanimity, viz., that retention of fragments of secundines encourages the growth of bacteria in the uterus.

From the study then of the results and opinions of the various writers mentioned, and of my own series of observations, I have come to the following conclusions:—

1. We may look on the genital passages of the female as normally free from pyogenic cocci, which can cause puerperal septicæmia.

2. The same can not be said as regards organisms both aërobic and anaërobic, which while not actually pyogenic may yet be capable of causing the slighter fevers of the puerperium.

3. Gonococci may be found in the puerperal uterus, even in cases running an apparently normal course.

4. Antiseptic douching before, during, or after labour, is to be considered in all ordinary cases not only unnecessary but actually dangerous, since it has been amply proved that the normal secretions of the genital passages have distinct bactericidal powers, and if we remove those secretions by douching we lower the powers of resistance of these parts, and thus increase the danger of infecting them by accidental contamination in the process of douching.

Perhaps some additional details as to technique, etc., would not be out of place here.

As to sterilization, the method I adopted was simply to boil all the necessary instruments for at least 15 minutes. The cotton wool used for swabs was sterilized by dry heat. My hands were prepared

as if for a surgical operation. The method of obtaining the secretion has already been mentioned. The tubes were sealed with wax and transferred to the laboratory of the Dundee University College, where they were examined as soon as possible. The middle part of the secretion was always chosen, the tube being broken there, and a large loopful inoculated on each of the following media, always with the same loop, to secure uniformity in quantity:—

1. Slightly alkaline agar slopes.

2. Slightly alkaline agar stabs.

3. Agar in tubes, melted, inoculated at 40°C. or thereabout, allowed to solidify, and then covered over with a fresh layer of melted agar.

4. Bouillon.

Gelatin was used in the first twelve observations for inoculation (3), but was discarded on account of its liability to contamination. Coverglass films were made and stained with saturated watery methylene blue in every case, and in the last 56 observations, also by the Gram-Weigert method, methylene blue films were also made and examined from every tube in which growth appeared, except most of the overlayered tubes. The organisms found were these:—

A. *In the uterine and vaginal specimens.*

A *bacillus* of somewhat variable size, which in process of development took on spore formation and showed a great variety of what were apparently involution forms, *e.g.*, beading, clubbing, bipolar staining, and formation of filaments of various lengths, never however branching. It resembled in many ways bacillus subtilis, but grew both aërobically and anaërobically, and was larger and coarser. It stained by Gram.

2. *A short bacillus*, generally in pairs, often showing distinct metachromasis; grew in bouillon only, and appeared in one case to be in pure culture.

3. A *large coccus*, occurring sometimes in pairs, at other times in groups like a staphylococcus. It appeared in two or three cases in pure culture, and had not the appearance of any of the pyogenic organisms.

4. A small coccus, occurring singly, in pairs, or groups, generally along with 1, often showed metachromasis.

5. A diplococcus having the morphological characters and staining reactions of the gonococcus.

B. *In the vaginal specimens only.*

6. A coccus having the characters in film and culture of staphylococcus pyogenes aureus. Almost certainly a contamination, it occurred once only.

7. A bacillus staining uniformly and both in microscopic and macroscopic appearances resembling closely bacillus coli communis, occurred in the same patient on two different occasions. She had no clinical disturbance.

8. Forms like yeast fungi appeared in two specimens.

The question of gonococcal infection is one of considerable difficulty, because, although scientifically speaking it cannot be a cause of auto-infection, yet with its capacity for living there for indefinite periods of time, it becomes such for all practical purposes. Frumsholz,[36] who has made a careful study of the question, states that the lochial discharge forms an excellent medium for the development of the gonococcus, which always multiplies very rapidly in the first days of the puerperium. He holds further that though true mixed infection is rare with the gonococcus, yet on the contrary secondary invasions by other pyogenic bacteria are favoured by its presence.

Krönig concludes that even where we get a puerperal infection with gonococci, the results are less acute and more prolonged than in an ordinary puerperal septicæmia.

As regards treatment during labour of a case with gonorrhœa, perhaps, bearing in mind the great difficulty of curing such a condition under ordinary circumstance, the best plan is to leave them alone.

Finally, perhaps you will allow me to make a short note on five other cases, which were examined in series with the others described, but which for various reasons developed febrile temperatures, *i.e.*, above 100°F., during the puerperium. In one only was a pyogenic organism discovered, viz., the gonococcus. In the other four the bacteria present were to all appearances simply the same cocci and bacilli as were so frequently found in the other cases. In one case they grew very profusely, in the others not specially so. A consideration of these cases, small in number though they are, would seem to suggest that feverish symptoms during the puerperium are by no means always due to ordinary pyogenic bacteria, and I can entirely agree with Marx in strongly emphasising the necessity for considering every puerperal case with a disturbance of temperature, from a general as well as a local standpoint. In one of the five cases, I feel sure that severe constipation was the chief cause among the several possible factors of disturbance which she offered.

In another, the rise of temperature was so evanescent, and so comparatively slight, that taking into consideration the evidence of sub-involution with retention of fresh, copious, lochia, I think one might possibly look on it as analogous to the so-called "aseptic" fever of surgical wards, *e.g.*, in simple fracture of limbs.

A third case quite baffled me to explain the cause of a rise of temperature for a few hours to 102°F. There was absolutely no evidence of pelvic trouble. The other two cases gave sufficient evidence of pelvic trouble to account for their temperatures. Showing as they did exactly the same bacteria as the other 20 normal cases, they constitute my reason for hinting at the possibility of occasional puerperal uterine trouble from bacteria other than the ordinary pyogenic organisms. They do not, however, to my mind, provide any reason for altering the conclusions I have already stated on page 182.

REFERENCES.

1. Gönner. "Uber Mikroorganismen im Sekret der Weiblichen Genitalien während der Schwangerschaft und bei puerperalen Erkrankungen." *Centralbl. f. Gynäk.*, 1887. Vol. ii.
2. Gönner. "Sind Streptokokken in Vaginalsekret gesunder Schwangerer und Gebärender?" *Centralbl. f. Gynäk.*, 1899.
3. Döderlein. "Untersuchungen über das Vorkommen von Spaltpilzen in den Lochien des Uterus und der Vagina der Wöchenrinnen." *Archiv für Gynäkol.* Bd. xxxi.
4. Döderlein. "Das Scheidensekret und seine Bedeutung für das Puerperal-fieber." *Leipzig*, 1892.
5. Döderlein. "Diskussion zum Bakteriengehalt des Weiblichen Genital-kanales." *Centralbl. für Gynäkol.*, 1895.
6. Döderlein-Winternitz. "Die Bakteriologie des puerperal Sekretes." *Hegar's Beiträge*, 1900.
7. Winter. "Die Mikroorganismen im Genital-kanal der gesunder Frau." *Zeits. für Geburts. und Gynäkol.*, 1888. Bd. xiv.
8. Ott. "Zur Bakteriologie der Lochien." *Archiv für Gynäkol.*, 1888. Bd. xxxii.
9. Czerniewsky. "Zur Frage von dem puerperal Erkrankungen." *Archiv für Gynäkol.*, 1888. Bd. xxxiii.
10. Thomen. "Bakteriologische Untersuchungen normaler Lochien und der Vagina und Cervix Schwangerer." *Archiv für Gynäkol.* Bd. xxxv.
11. Steffeck. "Bakteriologische Begründung der Selbstinfektion." *Zeits. für Geburts. und Gynäkol.*, 1890. Bd. xx.
12. Burguburu. "Zur Bakteriologie des Vaginal Sekretes Schwangerer." *Archiv. für Experimentelle Pathologie und Pharmacologie.* Bd. xxx.
13. Maslowsky. "Zur Lehre von der Selbstinfektion." *Vide Centralbl. für Gynäkol.*, 1894.

14. Witte. "Bakteriologische Untersuchungen bei patholog. Zustanden im Weiblichen Genitalapparat, mit besonderer Berücksichtigung der Eiterreger. *Zeits. für Geburts. und Gynäkol.*

15. v. Franqué. "Bakteriologische Untersuchung bei normaler und fieberhaften Wochenbetter." *Zeits. für Geburts. und Gynäkol.*, 1893. Bd. xxv.

16. Stroganoff. "Zur Bakteriologie des weiblichen Genitalkanals." *Centralbl. für Gynäkol.*, 1895.

17. Burckhardt. "Uber den Einfluss der Scheidenbakterien auf den Verlauf des Wochenbettes." *Archiv für Gynäkol.*, 1894. Bd. xlv.

18. Krönig. "Scheidensekretuntersuchungen bei 100 Schwangeren. Aseptik in der Geburtshülfe." *Centralbl. für Gynäkol.*, 1894. Bd. xliii.

19. Krönig. "Bacteriologie des weiblichen Genitalkanals." Menge und Krönig. *Leipzig*, 1897.

20. Walthard. "Bakteriologische Untersuchungen des weiblichen Genitalsecretes im Gravidität und im Puerperium." *Archiv für Gynäkol.*, 1895. Bd. xlviii.

21. Vahle. "Uber das Vorkommen von Streptokokken in der Scheide Gebärender." *Zeits. für Geburts. und Gynäkol.*, 1896. Bd. xxxv.

22. Kottmann. "Beitrag zur Bakteriologie der Vagina." *Archiv für Gynäkol.*, 1898. Bd. lv.

23. Whitridge Williams. "Bacteria of the Vagina and their Practical Significance, based upon the examination of the Vaginal Secretion of 92 Pregnant Women." *Amer. Journ. of Obstet.*, 1898. Vol. xxxviii.

24. Whitridge Williams. "The Cause of the Conflicting Statements Concerning the Bacteria of the Vaginal Secretion of the Pregnant Woman." *Amer. Journ. of Obstet.* Vol. xxxviii.

25. Burckhardt. "Uber den Keimgehalt der Uterushöhle bei normalen Wöchnerinnen." *Centralbl. für Gynäkol.*, 1898.

26. Hallé. "Récherches sur la bacteriologie du canal genital de la femme." *Thèse de Paris. Vide Centralbl. für Gynäkol.*, 1899.

27. Stahler-Winckler. "Uber den Bakteriengehalt des puerperalen Uterus." *Monats. für Geburts. und Gynäkol.*, 1899. Bd. ix.

28. Stahler-Winckler. "Sind die aus Vaginalsekret zu zuchtenden Streptokokken eine besondere von Streptococcus Pyogenes unterscheidbare Art von Kettenkokken." *Monats. für Geburts. und Gynäkol.*, 1900. Bd. xi.

29. Franz. "Bakteriologische und Klinische Untersuchung über leichte, Fiebersteigerungen im Wochenbette." *Hegar's Beiträge*, 1900.

30. Bensis. "Récherches sur la flore vulvaire et vaginale chez la femme enceinte." *These de Paris*, 1900.

31. Wormser. "Zur Frage nach dem Keimgehalt des Uterus in den späteren Tagen des normalen Wochenbettes." *Beiträge zur Geburts.*, 1901.

32. Vogel. "Bakteriologische und Klinische Befunde bei fiebernden und Normalen Wöchnerinnen." *Zeits. für Geburts. und Gynäkol.*, 1901. Bd. xliv.

33. Scharenstein. "Zur Bakteriologie des Puerperal Uterushöhle-sekretes." *Hegar's Beiträge*, 1901.

34. Bergholm. "Uber Mikroorganismen des Vaginalsekretes Schwangerer." *Archiv für Gynakol.*, 1902.

35. Franz. "Zur Bakteriologie des Lochial-sekretes fieberfreier Wöchnerinnen." *Hegar's Beiträge*, 1902.

36. Fruinsholz. "Du Rôle dú Gonococque du cours de la grossesse et de la Puerperalité." *Annales de Gynéc. et d'Obstét.*, 1902.

37. Marx. "The Bacteriology of the Puerperal Uterus: Its Relation to the Treatment of the Parturient State." *Amer. Journ. of Obstet.*, 1903.

38. Stolz. "Studien zur Bakteriologie des Genitalkanals in der Schwangerschaft und im Wochenbette." *Hegar's Beiträge*, 1903.

REVIEW OF CURRENT LITERATURE.

OBSTETRICS.

Bulletin of the Lying-in Hospital of the City of New York.

Published under the Supervision of the Medical Board, June, 1905.

THIS Bulletin forms No. 1 of Volume ii., and is to be published quarterly. It contains reports of cases observed in the hospital, and also reviews of books and a bibliography of obstetrical literature.

Among the articles is a statement in tabular form by the Registrar, Dr. Taylor, of all the cases of pelvic deformity in 30,000 labours, any case where the conjugata vera fell below 10 cm. being reckoned a deformed pelvis; these numbered 269. As regards choice of operation in cases of pelvic deformity, not in itself sufficient to preclude the possibility of extracting a live child, the staff seems to prefer version if the head be above the brim and movable; though out of 101 children delivered by forceps 24 died, while out of 103 delivered by version 48 died.

Dr. Davis records a case of cholecystotomy in the 7th month of pregnancy, without interrupting gestation.

Dr. Markoe contributes a case of Cæsarean section performed entirely in the interests of the child in a case of eclampsia; also a case of leukæmia associated with pregnancy.

Dr. Lobenstine, with the pathologist, Dr. Welch, reports a case of rupture of the stomach and of the diaphragm associated with eclampsia. The patient was a primipara, and about eight hours after a normal labour had a severe convulsion. This was followed during the next eighteen hours by more convulsions, from which she passed into a state of stupor. She died on the third day. The authors are satisfied that the rupture occurred during the convulsions, and are unable to explain why she lived so long after they had ceased.

Some of our larger lying-in hospitals might publish a similar bulletin, though the *res angusta* is a more serious difficulty on this side of the Atlantic than with our American brethren.

E. H. L. OLIPHANT.

Inauguration of the Tarnier Memorial.

L'Obstétrique, July, 1905.

A MONUMENT to the memory of Professor Tarnier was unveiled on the 1st of June by M. Bienvenu-Martin, the Minister of Public Instruction. It is on the front of the clinique Tarnier, and in high relief, represents the master, in his hospital garb of blouse and apron, standing beside the bed of a young mother, who holds her infant in her arms; near the head of the bed is an incubator.

Among the speakers were Brouardel, Pinard and Budin; and one of the chief points made in the orations was the reference to Tarnier's campaign against puerperal fever before the days of Pasteur-Listerism. As "intern" in the Maternité in 1856 he had been appalled by the mortality of nearly 10 per cent., and in the following year, in his graduation thesis upheld the doctrine of the contagious character of puerperal fever, and before the introduction of antiseptics had reduced the death-rate to a little over 2 per cent. Along with Lucas-Championnière he was among the first in France to welcome Lister's methods. Old faiths die hard, and Tarnier has all the credit of winning the uphill fight against prejudice and conservatism, and had the satisfaction of seeing his distinterested labours rewarded by the reduction of puerperal sepsis to a minimum in his hospital. But in any historical survey of the fight against puerperal sepsis it must be recorded that in this country and in America the contagious nature of the disease had been recognised at an earlier date. The famous polemic of Oliver Wendell Holmes was written in 1843, and in the same year Farr, in his Registrar-General's report, drew attention to a certain number of deaths caused by the contagion of puerperal fever, communicated by the attendants.

E. H. L. OLIPHANT.

The Origin of the Syncytium and the Trophoblast.

SFAMENI (P.). *Archives Italiennes de Biologie.* Tome xliii. Fasc. 1.

THIS paper appeared originally in Italian. The present note as to its contents is taken from an abstract by the author translated into French, and published as indicated above. This is mentioned in case in the varied transformations a false impression of the original article may possibly be conveyed, not as to its general drift, of that there can be no mistake, but possibly in some small, but important, particular.

Sfameni holds that the now generally received view as to the origin of the syncytium and the trophoblast is wrong. He declares that they both arise from the uterine epithelium. He holds, moreover, that the decidual cells themselves have an epithelial, and not a connective tissue, origin, and that the common basis, therefore, of decidua, of syncytium, and of trophoblast is the epithelial lining of the uterus. His opinion is based largely on the careful microscopic examination of a gravid tube. He states that it is clearly seen in his preparations that there is a transformation of some of the cells of the epithelial lining into syncytial elements, and equally clearly, the epithelial derivation of the decidua.

He adds, "Since it is positively shown that syncytium and cells of Langhans are one and the same thing, if the syncytium is derived from the tubal epithelium, and, by analogy, from the uterine epithelium, the cells of Langhans ought equally to be derived from it." Again, one knows that the ovum, fixing itself in the mucous membrane of the uterus or of the tube, is surrounded by a cellular involucrum, called trophoblast, the forerunner of the syncytium and Langhans' layer of the young villi. This trophoblast Sfameni believes to be derived from the uterine epithelium. Being convinced, too, that the decidual cells are an epithelial product, he holds that the ovum does not pass beyond the epithelium to be buried in connective tissue, as is generally stated, but that it remains enveloped in epithelium.

Criticising the works of Peters and v. Spee, Sfameni claims to have shown that their theory of the penetration of the ovum by its own activity is untrue. Relatively to the origin of the syncytium, he attributes very great value to the facts observed by Peters, but differs from him in the interpretation of them. I admit, with Peters, he says, that the syncytium is derived from the trophoblast, but differ from him in tracing the origin of the trophoblast to fœtal ectoderm.

It is impossible to say, without consulting the original paper, what value is to be attached to these assertions, and contradictions of the orthodox view, but it seemed worth while to call the attention of those interested in the subject to Sfameni's work. The paper was published at Pisa in 1904—*Giornale italiano delle Scienze mediche*, n. 2—3—4—5—6, Pise, 1904—and was illustrated.

R. Hamilton Bell.

Remarks on the Biological Theories of Eclampsia.

LABHARDT. *Zeits. für Geburts. und Gynäkol.* Bd. liv. Ht. 2.

THE most recent theories regarding the ætiology of eclampsia, which may be briefly summed up as follows—"deportation of villi or parts of villi, syncytiolysin, syncytiotoxin"—are so fascinating and so warmly supported by various writers that it is salutary to pause and consider for a time that these views are purely theoretical and based on no sound foundation of solid established fact.

Labhardt doubts whether these theories are proceeding in the right direction. He carried out a series of experiments with Wormser, attempting to bring about eclampsia in rabbits. All the experiments were absolute failures. The "biological" theories may be divided into three groups:—

1. Schmorl proved that placental cells passed into the maternal circulation. Ehrlich showed that the entrance of foreign cells into an organism brought about chemical changes. *Veit's* view is that, as the result of the entrance of placental cells a poison is formed in the maternal blood. Normally, only a few cells enter the maternal blood, and the amount of poison formed is correspondingly small. If, however, a large number of placental cells suddenly enters a large quantity of the poison is formed and eclampsia results.

2. *Ascoli* goes a step farther—foreign cells bring about the formation of new substances which dissolve them and neutralise their poisonous effect. These new substances, called *Lysins*, are formed in excess, according to the law of over-compensation. If a great deportation of villi takes place suddenly an excessive quantity of lysin (syncytiolysin) is formed, with the result that eclampsia is caused.

3. *Weichardt* goes even farther, on the strength of his partly successful experiments. By the solution of the placental cells a new poisonous substance is formed, "syncytiotoxin," which is normally rendered innocuous by an antitoxin. If the antitoxin for some reason fails to be formed, the syncytiotoxin brings about eclampsia.

In judging of the value of a new theory of disease the following three questions must be considered:—

(*a*) Does the new theory agree with the morbid anatomical findings of the disease, and also with the biological and pathological facts?

(*b*) Does it agree with the clinical facts?

(*c*) Do the results of experiments come so near the actual disease that they can be looked on as identical with it?

(*a*) It is an established fact that villi or parts of villi are carried away into the maternal circulation of patients who suffer from eclampsia and of those who do not. Is the difference in these two cases a quantitative one? Schmorl has recently recorded the results of investigation in 150 patients. In 83 cases of eclampsia he found that placental cells had been carried away in large numbers. Deportation of entire villi he does not consider to be a regular or frequent occurrence, but rather a result of severe mechanical damage to the placenta, *e.g.*, manual separation, placenta prævia, and rupture of uterus. In spite of this deportation of complete villi eclampsia did not occur. Placental emboli *may* be the result of eclamptic fits rather than the cause. Theoretically, it may be suggested that the yet unknown poison which produces eclampsia may be the cause of the detachment of placental cells. Schmorl found the greatest number of placental emboli in cases of early abortion and vesicular mole, in none of which were there symptoms of eclampsia. Why is the *syncytium* always considered responsible? As yet there is not an absolute consensus of opinion as to its origin. Early in pregnancy there is much syncytium and little eclampsia; at the end of pregnancy there is little syncytium and much eclampsia. The terms "syncytiotoxin" and "syncytiolysin" might wisely be given up, and "choriotoxin" and "choriolysin" used instead.

Is there any ground for considering that placental cells are "foreign" to the mother in Ehrlich's sense? The chorion is the product of a maternal cell, and it is hardly rational to suppose that the product of one of her own cells can poison a woman and cause the production of anti-bodies.

If the biological theories are correct, why does not eclampsia occur in other placenta-bearing animals whose placentæ are similar in construction to the human, *e.g.*, apes, insectivora, etc.? The so-called eclampsia of bitches cannot be seriously considered as being the same thing as eclampsia in women. If villi are nourished by maternal blood it can make no difference whether they are free or not. If they are nourished by fœtal blood it might be considered that when the fœtal circulation ceases at death of the fœtus the chemical characteristics of the placental cells might become altered and have a deleterious effect on the mother, *but* it is an acknowledged fact that eclampsia often comes to an end when the fœtus dies.

(*b*) The biological theory quite fails to meet the facts that eclampsia occurs more frequently in primigravidæ, that it is more

severe when it occurs in multiparæ, that it occurs with undue frequency in cases of generally contracted pelvis, and with hydramnios, or to explain its geographical distribution, the influence of the weather on eclampsia, and its occurrence in the puerperium. If deportation of cells or villi is the cause, why does not eclampsia occur in cases of extrauterine pregnancy? Tubal abortion is exactly analogous to Weichardt's injection experiments of placental tissue into the peritoneal cavity, but here the placental cells do not act as "foreign" cells, do not cause changes in the kidneys or any other organs, and do not cause eclampsia.

(*c*) The experimental evidence so far is worthless, *i.e.*, evidence from injection of relatively huge quantities of human placental tissue into rabbits! It is true that in some cases changes in the liver have been found, but the same changes were found after injections from other human organs and never after rabbits' placental tissue had been injected into rabbits.

HENRY RUSSELL ANDREWS.

The Diagnostic Importance of the X-Rays in Pregnancy.

GORGIBOWSKI. (Russian Obstetrical and Gynæcological Society). *Monats. für Geburts. und Gynäkol.*, Bd. xxi., Heft 6.

THE author first undertook a series of experiments to see whether the X-rays exerted any evil influence upon the pregnant animal, the embryoes or the progress of pregnancy itself; and, secondly, what use could be made of the rays as a diagnostic help. Ten guinea-pigs and four rabbits were subjected to the influence of the X-rays on many occasions, the most harmful form of tube being used, and the exposures being 12 to 60 times longer than is usually necessary to take a photograph. By these experiments it was found that no evil effect was produced on the animals. Their appetites remained good, they gained weight, there was no local skin disturbance, the embryoes were all born alive except two, and the weights of the young were approximately higher than those of control animals. Later 130 radiograph pictures were taken of pregnant guinea-pigs and rabbits; and at all events in guinea-pigs very precise pictures of the fœtal skeletons were obtained two to two and a half weeks before the end of pregnancy. The active movements of the embryoes, and the movements communicated by the rapid breathing of the animals all helped to make the negatives blurred in outline, especially in rabbits. The experiments showed that the X-rays could be safely

made use of in pregnancy, and that the position and number of the embryoes could easily be made out. Twenty radiograph pictures were then taken of eight pregnant women, with the following results:

To obtain a good picture of the fœtal head the respiration movements must be as curtailed as possible; firm bandaging of the abdomen helps in this respect.

A picture of the fœtal head could only be obtained in primiparæ. The kind of tube used has to be carefully chosen, as in some the rays are too powerful and pass through the substance of the bones, while in others they are too weak, and are arrested in the connective tissues of the mother and fœtus.

No evil effects whatever followed the taking of these pictures, either to the mothers or discernible in the fœtuses when born. One of the latter had an ulcer on the neck, which healed very quickly under anti-syphilitic treatment, and did not remain chronic as is so common in X-ray burns. It was decided that the ulcer really was syphilitic, and was not in any way caused by the rays.

In a discussion which followed the paper the author explained that in his opinion photographs of the fœtal head could only be obtained in primiparæ because in them the fœtus was not so movable owing to the tonicity of the uterus, to the fact that the head is often in them fixed in the pelvis, and is therefore not so subject to passive movements caused by respiration.

THOS. G. STEVENS.

Two Cases of Pregnancy after Nephrectomy.

BATINI (E.). *Annali di Ostet. e Ginecol.*, July, 1905.

THE author refers to a paper published in 1903 in the same journal by Cova, with a collection of thirty-six cases. The first of Dr. Batini's cases is that of a v.-para, who suffered from several fainting attacks in the eighth month of pregnancy, and was found to have a considerable quantity of albumen in the urine. During her stay in hospital she passed from 750 to 1,350 c.c. of urine. At some time after her first labour she had had a kidney removed for tubercular disease. The pregnancy ended in a natural labour without any special symptoms; the faintness from which she had suffered earlier was not ascribed to uræmia. She was able to suckle her infant. The second case was that of a iv-para, whose right kidney had been removed after her first confinement. During the pregnancy observed she had several uterine hæmorrhages, which were found at the labour

to have been due to a marginal insertion of the placenta. She was easily delivered of twins, one of whom she was able to suckle. Her urine contained a trace of albumen. The author refers to other reported cases, and to experiments on animals, and concludes that, as a kidney is not removed in the case of the human subject unless it be practically functionless, the other kidney has had time to undertake the extra work thrown on it, even though the operation be performed during the course of a pregnancy.

E. H. L. Oliphant.

Appendicitis Complicating Pregnancy.

Coe (Henry C.). *Surgery, Gynæcology and Obstetrics*, July, 1905.

The author remarks upon the small amount of attention which has been bestowed upon this subject by recent writers on obstetrics. Edgar, Williams, and Hirst do little more than refer to the subject, but Dorland has an extended notice upon it. Kelly, in his recent monograph, devotes a chapter to it as a complication of pregnancy.

Mundé is credited with having been the first to call attention to the subject, but Coe says it is doubtful if the case was really one of appendicitis. Hancock reported, in 1848, a case of perityphlitic abscess, which he opened and drained.

Different views are held as to the frequency and prognosis of the condition during pregnancy. Coe agrees with Kelly that many mild cases occurring during pregnancy are overlooked, while more serious ones developing after delivery are erroneously referred to puerperal sepsis.

Fraenkel believes that "the appendix during pregnancy is subject to no different conditions than at other times," but he admits that the constipation of pregnancy must favour fresh attacks in recurrent cases. Coe maintains that the intestinal toxæmia during pregnancy is liable to affect the appendix. He says that considering the large number of women who have had former attacks without accompanying adnexal disease who become pregnant, it is surprising that the condition is considered a rare one. In 1898 Pinard collected 45 cases, in 30 of which the diagnosis was confirmed by operation or an *autopsy*, and since then many cases have been reported.

The majority of the cases observed by Coe during pregnancy have been of a mild type, and he gives illustrative cases. Many of these recovered without operation. In one he removed a thickened appendix without interrupting the pregnancy. In another case

McBurney operated and removed a suppurating appendix from a bed of adhesions which were firmly attached to the uterus at about the 5th month of pregnancy. The patient was confined of twins at the 8th month (both of which lived), and she then had several eclamptic fits, but recovered. In a case seen with Dr. Marx, a sloughing appendix was removed during the 8th month of pregnancy. The patient was profoundly septic and an unfavourable prognosis was given, but next day she was delivered of a live child, and eventually recovered. In another case 4 months pregnant, Coe failed to reach the abscess by an exploratory abdominal incision, but succeeded in opening and draining it from below. The patient did not miscarry until a fortnight later, and she made a good recovery.

He discusses some of the conditions which may be mistaken for appendicitis, such as a ruptured ectopic pregnancy and torsion of the pedicle of a small ovarian cyst or hydrosalpinx. He says that in the fulminant cases "there is practically no other source of such a rapid and intense septic infection during pregnancy, except perforation of the appendix."

In regard to the prognosis, he does not consider that it is so serious as Abrahams maintained. In the perforative variety occurring during the later months of pregnancy he admits that there is great danger, as the patient may die of general sepsis, or miscarry and have a subsequent puerperal infection. In such cases the child's chances are nil, not from the high temperature, but from direct infection through the umbilical vessels.

His views on treatment are much the same as Pinard's, viz., to treat appendicitis in the pregnant female the same as in the non-pregnant. In mild cases to carry the patient through the pregnancy, if possible, and then operate as soon as convenient after delivery. When there is perforation or an abscess, operate as soon as possible; disturb the uterus as little as possible, and drain freely.

ROBERT JARDINE.

Appendicitis and Pregnancy.

WEBSTER (J. CLARENCE). *Surgery, Gynæcology and Obstetrics*, July, 1905.

IN 1893 Mundé was the first to refer to this condition in America, and in 1897 Abrahams was able to collect 11 cases reported by American authors, and to these he added four of his own. Since then a considerable number of cases have been reported, both in

America and Europe. The disease is more common than is suspected, as the indications are often overlooked, or confounded with various disturbances which are frequent in the pregnant condition. The majority of the reported cases have had distinct and alarming phenomena. Donoghue states that 80 per cent. of these have occurred during the first six months of gestation.

Webster states that the pregnant condition does not favour the occurrence of primary appendicitis, but where there has been previous inflammation in or around the appendix the increased vascularity and constipation may be factors which exert a harmful influence. He concludes that the most important element may be mechanical from pressure of the growing uterus upon the appendix and cæcum or the stretching of adhesions. The latter factor will be most serious where the appendix is adherent to the broad ligaments or pelvic viscera. Definite attacks have been observed in successive pregnancies.

Gestation certainly increases the danger, especially in suppurative attacks. The mortality following perforation, whether operated on immediately or not, is very high. In cases of localised suppuration there is far more danger than in non-pregnant cases, because spontaneous emptying of the uterus tends to take place. The increase in the size of the uterus tears up adhesions, and the abscess cavity is liable to burst internally and cause general infection. Even when the abscess is opened and drained there is greater risk than in non-pregnant women.

Appendicitis occurring soon after labour is in some cases due to mechanical changes in the uterus and adnexa, which stretch, twist, or even rupture the appendix. Many of these cases are diagnosed as puerperal infection. Several cases have been reported where the appendix was the source of infection which was looked upon as puerperal in origin.

The author maintains that there is no adverse influence on the pregnancy in slight cases, nor even in some cases of sharp attacks where there is no suppuration. However, in severe cases, especially where there is an abscess or general peritonitis, the fœtus is liable to die, or the pregnancy to be interrupted. The toxic matter affects the fœtus, and even if it is born alive it is not likely to survive, if the patient has been septic for some time.

Diagnosis. In a typical acute attack this is sometimes easy, but it is often uncertain, as so many of the indications may be ascribed to the pregnancy. Even the leucocytosis may be thought to be due

to the pregnancy. Whenever there is fever, with acute pain in the right side and nausea, the possibility of appendicitis should be kept in mind. A severe sudden attack may simulate a ruptured ectopic gestation. A local abscess may be mistaken for a tumour.

Treatment. The author maintains that every woman who is likely to become pregnant, in whom a definite attack of appendicitis has once occurred, should be operated upon before pregnancy is allowed to take place. When a first attack occurs during pregnancy, or there is a recurrence of an old attack, the operation should be undertaken as early as possible. The earlier in pregnancy, the more satisfactory will the result be. There is always a risk of the uterus emptying itself. In suppurative cases there is much greater risk, and if the uterus empties itself, infection of the genital tract is liable to occur. When there is general peritonitis free drainage is necessary, and it is very difficult to carry out satisfactorily if the pregnancy be at all advanced.

In acute cases in advanced pregnancy Marx advises *accouchement forcé* followed by the abdominal operation. Webster agrees with this, but says if there is a localised abscess it is not advisable, because of the risk of rupturing the abscess.

When the attack occurs during labour the operation should be performed very soon after delivery. McBurney's incision is the one generally favoured.

———— ROBERT JARDINE.

Primary Carcinoma of the Vagina, Complicating Pregnancy.

COVA (ERCOLE). *La Ginecologia*, July 15th, 1905.

COVA gives a summary of all the recorded cases of primary carcinoma of the vagina, and of 17 cases in which this condition complicated pregnancy. He records a case which has come under his own observation.

The patient was a primigravida aged 36. During pregnancy there was complete absence of symptoms due to the vaginal growth, explained by the fact that she was separated from her husband. She was first seen when labour was well advanced. On the right vaginal wall was found a small raised tumour with a hard irregular surface, bleeding readily and friable. The labour terminated normally. Examination of a fragment of the growth showed the typical structure of a squamous-celled carcinoma. Excision had to be postponed on account of thrombosis of the left leg, with slight rise of temperature. Six weeks after labour the growth was excised with an

area of healthy tissue. The vaginal wall beyond the growth was found to be quite free from epithelial columns, from which fact Cova hoped that a complete cure might result, whereas in cases of primary carcinoma of the vagina recurrence usually occurs early.

HENRY RUSSELL ANDREWS.

Tuberculosis and Pregnancy.

MALSBARY (GEORGE E.). *Amer. Journ. of Obstet.*, July, 1905.

DR. MALSBARY discusses the subject under seven heads.

1. Physiology of pregnancy.
2. Pathology of tuberculosis.
3. Tuberculosis occurring during pregnancy.
4. Pregnancy occurring in the tuberculous.
5. Prognosis.
6. Treatment, including prophylaxis.
7. Advice regarding marriage, nursing, etc.

The physiology of pregnancy is shortly considered in reference to the effect on the different systems of the body. In discussing the respiratory system the author says "there seems to be some unexplained relation between the larynx and the uterus, possibly analogous to the so-called genital spots in the nose." The opposing views as to hypertrophy or non-hypertrophy of the heart during pregnancy are dealt with, but the author does not clearly indicate which view he holds. The digestive system is the most important one in regard to tuberculosis. The vomiting of pregnancy, if it be at all persistent, is specially pernicious.

Under pathology of tuberculosis, in discussing the etiology, he maintains that it is doubtful if there is any pre-disposition or immunity carried by the spore or ovum. In support of the view of infection through the placenta he gives the results of the examination of 20 placentæ obtained by Schmorl and Geipel from tuberculous patients. Schmorl assumes that the fœtus is tuberculous whenever tubercle bacilli invade the placenta. Of the 20 placentæ examined 11 were from far advanced cases of pulmonary tuberculosis, four were from moderate cases, and three from patients in the early stages; one was from a case of miliary tuberculosis, and one from a case of tubercular meningitis. Two of the cases were delivered at the seventh and eighth months, and the remaining 18 were at or near full time. Nine of the placentæ were reported to be tuberculous. Five of these were from advanced cases of pulmonary tuberculosis, one from a

moderate case, one from an early case, and one from a case of tubercular meningitis. In only three of the cases could the diagnosis be made macroscopically.

The author remarks that these observations have not been confirmed, and that only ten cases of placental tuberculosis have been previously reported. He points out the possibility of confusing the tubercle bacillus with the smegma bacillus, and the likelihood of tubercle bacilli being conveyed from the patient or some outside source to the placenta during delivery or later. He also maintains that "it is as difficult to understand why intra-uterine transmission of tuberculosis should lead so often to infection of the lungs, as some observers contend, as it is to understand how pulmonary tuberculosis may result in placental infection, in the absence of tubercular infection of the uterus, or miliary tuberculosis." He says "such a method of transmission is almost inconceivable."

The possibility of the passage of the products of the tubercle bacillus through the fœtal circulation can be much more readily accepted. In the author's experience it is not uncommon for the child to die shortly after birth from the effects of toxins transmitted through the placenta. Immune substances seem to pass through the placenta even more readily than the toxins, so that the fœtus has been credited with increased resistance to the tubercle bacilli.

The question of the transmission of tuberculosis through milk is discussed. Tuberculous women should not nurse their children. The author maintains that the chief danger is from infection through the mother's sputum, as the immediate surroundings of the patient are sure to become contaminated. The breasts are liable to be contaminated by dirty hands. He admits, however, the possibility of the milk containing tubercle bacilli, and says that it usually contains poisons produced by the action of the bacilli.

3. *Tuberculosis occurring during pregnancy.*

The author maintains that there is an increase in the likelihood of tubercular infection in pregnant women, as they so often go into retirement during the pregnancy and live in vitiated atmospheres, often in close association with infected individuals. The want of proper exercise and fresh air reduces the resistance or immunity to tuberculosis. Cornet states that it has not been ascertained that pregnancy has an influence on the development of pulmonary tuberculosis, but renal tuberculosis has been attributed to it and also tuberculosis of the mammary gland during lactation. Miliary tuberculosis may be ushered in by uncontrollable vomiting of pregnancy.

As a rule the pregnancy is not interrupted. In advanced cases, it is usual for the mother to be delivered at full time, the child to die in a few days, and the mother in a few weeks.

4. *Pregnancy occurring in the tuberculous.*

Tuberculosis is said to predispose to pregnancy. In the author's experience these patients are not prone to abort or miscarry.

5. *Prognosis.*

The gravity of the disease is increased by pregnancy, chiefly through the deleterious influence of parturition and the puerperium. Laryngeal tuberculosis is much more dangerous than the pulmonary form. The prognosis for the child is very grave. According to Osler, Dubois observes that "if a woman threatened with phthisis marries, she may bear the first accouchement well; a second with difficulty; a third never." In the author's experience most of the maternal deaths occur after the first child.

6. *Treatment and prophylaxis.*

The treatment recommended is on much the same lines as for the non-pregnant. The open-air treatment is advocated, and also the use of tuberculin, which the author states is well borne by pregnant women. Dieting is of the utmost importance but care must be exercised in the excessive use of meat, as it may do harm if the kidneys are overtaxed, as they are so liable to be in pregnancy. The vomiting of pregnancy, if at all marked, is especially pernicious, and it should not be permitted to progress far before resorting to an interruption of the pregnancy. If artificial abortion is required for any reason, tuberculosis does not seem to contra-indicate the performance of the operation.

The author does not favour the interruption of the pregnancy unless there are strong indications such as pernicious vomiting. The earlier the pregnancy is interrupted the better.

In regard to prophylaxis tuberculous women should be warned to avoid pregnancy. The author says that if the husband is inconsiderate, "it might be necessary to consider means of preventing conception, the best and most satisfactory of which would be a dissolution of the union."

7. *Advice to tuberculous patients regarding marriage, nursing, etc.*

As a rule Punch's advice to those about to marry is the best one for tuberculous women, but there are exceptions. If there is a tuberculous tendency the woman should be warned against pregnancy,

and also against free sexual indulgence. The author repudiates the statement of one writer, whom he does not name, that "Pregnancy, coition, etc., are particularly desired by women affected with phthisis, which constitutes a pointing of nature towards a remedy for evils by which the system has been invaded." He approvingly quotes the following from Cornet, that "in sexual matters the consumptive must observe absolute abstinence as long as the process continues to progress. With the return of strength and well-being, however, a strict compliance with this demand becomes irksome, and it is best then to permit indulgence within definite limits."

Tuberculous mothers should not nurse their children, though some writers advise their doing so.

The paper concludes with an extensive bibliography, and a number of interesting extracts from some of the older writings on the subject.

ROBERT JARDINE.

An Unusual Case of Difficult Labour.

SHEILL (J. S.). *Dublin Journ. Med. Science*, July, 1905.

MRS. M., xii.-para, aged 43, was admitted to the Coombe Hospital as a case of hydramnios, with mal-presentation of the fœtus. On examination the diagnosis was confirmed, and the fœtal heart could not be heard. The membranes were punctured high up with a stilette to allow of some fluid draining away. When the membranes tore the head was brought down, and it became engaged; labour proceeded naturally till the head had come into the cavity of the pelvis, and presented at the outlet. In spite of vigorous pains no further progress was made, so the forceps was applied. The head, which was felt to be unusually large, was delivered with considerable difficulty, not so much on account of the size, but from impaction of the shoulders in the brim. The child's neck was very short, so the head could not be drawn sufficiently away from the vulva to permit of the hand being passed to relieve the obstruction higher up. As the child had evidently been dead for at least a week, it was decapitated, and the arms were brought down; but no amount of pulling could bring the child farther than to expose its nipples. Evisceration brought it only as far as the umbilicus. Dr. Sheill then cut off the body as high in the vagina as possible, and was then able to push up the impacted pelvis and bring down the feet. The child, without thoracic or abdominal viscera, weighed 12½ lbs. The mother left hospital ten days later quite well.

E. H. L. OLIPHANT.

Pubiotomy.

PORAK. *L'Obstétrique*, July, 1905.

THE author communicated a case in which he had performed Gigli's operation. He was of opinion that in this method there is greater risk of tearing the vagina than in symphyseotomy, as the anterior vaginal wall is unequally dragged. On the other hand, he thinks that there is less risk of infection when the section is through bone than through the symphysis.

E. H. L. OLIPHANT.

A Contribution to the study of the Motility of the Stomach in Pregnancy and in the Puerperium.

FOSSATI (GIUSEPPE). *Annali di Ostet. e Ginecol.*, July, 1905.

THE author confirms the results of previous observers who have made use of other methods. Dr. Fossati employed iodipin, which is believed to be broken up, and to give off free iodine only after passing through the stomach and on coming into contact with the pancreatic and biliary secretions. In a series of observations he found free iodine in the urine, on an average, 66 minutes after the ingestion of the iodipin, in healthy non-pregnant women; during the seventh month of pregnancy, in 62 minutes; in the eighth month, in 58 minutes; in the ninth month, in 55 minutes; at term, in 57 minutes; from the first to the fifth day of the puerperium, in 67 minutes; from the middle of the fifth day till the tenth day, in 63 minutes. He concludes that the motility of the stomach is already increased in the seventh month of pregnancy, and that the increase reaches a maximum in the ninth month; then a sudden fall after labour, and again a slight increase above the normal in the days immediately following, but he was unable to carry his observations to a more remote period. Primiparity or pluriparity do not seem to influence the result. The author discusses various hypotheses to account for the excitability of the stomach during pregnancy.

E. H. L. OLIPHANT.

GYNÆCOLOGY.

Primary Carcinoma of the Fallopian Tubes in a Woman under Thirty.

HARE (C. H.). *Boston Med. and Surg. Journal*, May 25th, 1905.

A WOMAN aged 29, married four years, entered hospital solely because she was sterile and desired to know if her barrenness could be cured. The catamenia were regular, dysmenorrhœa had begun with the first period, but had been absent for a year, there was neither leucorrhœa nor any bloody discharge between the periods. "Chronic tubes and retroversion" was the diagnosis. Abdominal section was performed.

The pelvic viscera adhered to each other and to omentum, small intestine, cæcum, and vermiform appendix. The left ovary seemed normal; it was not removed. The right ovary was enlarged to three times its normal size by small cysts, which were punctured; the greater part of the ovary was cut away. Each Fallopian tube "was thumb-size at the fimbriated ends, but the balance (*sic*), pencil size and hard, and both were removed entire by taking a wedge-shaped piece out of the uterine cornu." The vermiform appendix was amputated, and the fundus of the uterus fixed to the parietes by kangaroo tendon sutures. The amputated tubes were examined, and to the surprise of the operator were found to be the seat of primary carcinoma. The uterus and ovaries, with a piece of omentum, were removed a fortnight later. About a year after the operation the patient was examined and no trace of recurrence could be detected. A full pathological report of the tubes will be published by Dr. Leary, upon whose opinion Dr. Hare undertook the second and more radical operation.

ALBAN DORAN.

The Significance of Pseudo-ascites in Ovarian Tumours.

HÖRMANN (KARL). *Münch. med. Wochenschr.*, 1905, No. 12.

ASCITES accompanying ovarian tumours is not a true ascites, but is due to congestion, and is in reality a secretion of the tumour. The local metastasis is a sequence of such a condition, and is exemplified in the papillomata. Further, free fluid may appear in the abdomen from rupture of a cyst. When this fluid is serous it is readily absorbed, but this only occurs very slowly when the fluid is thick and mucoid. Such fluid also influences the peritoneum and causes a transudation with increase in the amount free in the peritoneum. The distinction between a true ascites and a collection of secretion-products (in part or whole) is easy when the fluid is examined. In true ascites there is little or no mucin. A number of examples are given. (This explanation seems rather inadequate to explain any case of ascites or pseudo-ascites occurring in connection with ovarian tumours).

ALEX. MACLENNAN.

Arterio-Sclerosis of the Uterus as a Causal Factor in Uterine Hæmorrhage.

FINDLEY (PALMER). *Amer. Jour. of Obstet.*, July, 1905.

IN this paper the author deprecates the statement of Herman and others that arteriosclerosis *per se* is sufficient to cause a hæmorrhagic infarction of the uterine tissues or hæmorrhage into the uterine cavity. He shares the opinion of Theilhaber and Meier that "the essential cause lies in the myometrium, that the sclerosed blood-

vessels and remote embarrassments to the circulation exercise a secondary and minor influence."

Dr. Findley considers that too little stress is laid on chronic metritis as a primary lesion, a condition which may exist independent of infection and primary in the muscular wall of the uterus. He discusses the controlling influence that the musculature exercises over the blood-vessels. The term "muscular insufficiency" is a relative one. With great blood-pressure a well-developed musculature may not prevent engorgement of the uterus, and, on the other hand, with a low blood-pressure a poorly developed musculature may be quite adequate. He maintains that any event which results in the lowering of the muscular tone of the uterus may cause abnormal loss of blood, supposing the capacity of the blood-vessels is not diminished through thickening of their walls and the blood-pressure is not correspondingly lowered. Degeneration of the musculature explains the prolonged menstrual periods in the course of anæmia and following acute febrile disease. *Post-mortem* examination of such cases shows marked atrophy of muscle fibres, and no apparent change in the endometrium. The building up of connective tissue in the uterine wall at the expense of the muscle fibres (fibrosis uteri) is another cause of muscular insufficiency. Abnormal hæmorrhages likewise occur in subinvolutions of the uterus where the muscular activity is impaired and venous congestion and excessive formation of connective tissue brought about. Similar changes may occur in the endometrium, and such a lesion is essentially that of a primary chronic metritis. The writer disposes summarily of Börner's theory of vaso-motor disturbances as a cause of these hæmorrhages. In his opinion, modern writers err by considering the blood-vessels rather than the impaired musculature. The changes in the vessel walls are secondary to the fibrosis of the uterine musculature. He grants that the loss of the elasticity of the vessel walls contributes to the venous congestion and capillary hæmorrhages, but he says evidence is wanting to prove that the hæmorrhages come from the sclerosed vessels. "*Nowhere is it recorded that rupture of the arteries was seen, or that there were aneurisms of the sclerosed vessels. The escaped blood was found farthest removed from the thickened blood-vessels, and was evidently capillary.*"

In support of his views the author refers to many reported cases of arterio-sclerosis, and gives abstracts of 4 cases observed by Reinecke in 1896 in the Clinic of Leopold, of Dresden.

He disapproves of the term "apoplexia uteri," by which a condition of the uterus, characterised by hæmorrhagic infiltration of the endometrium and arterio-sclerosis of the uterine arteries, is now known. Under this name Cruveilhier, who first used the term, von Kahlden, Klob, Rokitansky, and many others have written on

the subject. He summarises some of the cases reported, pointing out that the condition is not to be confused with hæmorrhage into the uterine tissue resulting from infectious diseases and heart lesions. In the majority of cases no blood was found in the uterine cavity, and the muscle fibres of the uterine wall were atrophied, with connective tissue taking their place. Von Kahlden does not believe that the hæmorrhage is due to rupture of the sclerosed vessels, but that its infiltrating character suggests the immediate cause to be a return flow from the veins, due to an obstruction of the venous circulation.

The author maintains that in the so-called "apoplexia uteri" it is probable that the hæmorrhages are not caused by the rupture of the blood-vessels, but are rather due to capillary oozing." "The loss of elasticity of the vessel walls, the fibrosis of the uterine musculature, and the thrombosis are all contributory factors to the hæmorrhage into the uterine tissues and cavity."

The paper contains several cases of his own bearing on the subject, and is illustrated by two coloured plates of arterio-sclerosis and calcification of the uterine arteries, and also a microscopic section of obliterating arteritis in a normal senile uterus. An extensive bibliography is appended.

ROBERT JARDINE.

Fibroid Tumours of the Uterus: their Surgical Treatment.

MARTIN (F. H.). *New York Med. Journ.*, June 17th.

THIS paper is based on Dr. Martin's last 200 consecutive cases of uterine fibroids operated on by himself up to December, 1904; also on the analysis of 1,188 cases reported by Dr. Charles P. Noble in May, 1904, and on the author's knowledge of 400 cases not submitted to radical operation.

Among his own cases Dr. Martin found dangerous symptoms from (1) enormous growth in 5·5 per cent.; (2) dangerous uncontrollable hæmorrhage in 20·5 per cent.; (3) pregnancy in 3 per cent.; (4) carcinoma in 1 per cent. Among what he calls inherent conditions of importance he notes (1) serious broad ligament extension in 9·5 per cent.; (2) serious adhesions to soft parts in 4 per cent.; (4) myxomatous degeneration in 14 per cent. Among complications he found (1) double pyosalpinx in 10 per cent.; (2) single pyosalpinx in 2·5 per cent.

After giving a warning that no one can say that any particular

patient is sure to recover from the immediate effects of operation, and after pointing out that of all his operation cases no less than 31·6 per cent. had serious complications, for the most part incurable without operation, and unsuspected before operation, Dr. Martin gives his conclusions. The routine treatment for fibroids of the uterus, presenting symptoms, in women under 45 years of age, should be supravaginal hysterectomy, except as stated below. The exceptions should be (*a*) in subperitoneal fibroids with only one or more developments which do not increase the size of the uterus, when myomectomy may be performed; (*b*) where excessive hæmorrhage has so reduced the patient as to render a preliminary ligation of the uterine arteries advisable; (*c*) where operation is refused it may be possible to tide the patient over the menopause by such palliatives as ergot and galvanism.

The treatment of large tumours should be supravaginal hysterectomy.

Tumours apparently uncomplicated, of medium size, in women over 45 may be managed by one of the less radical methods, such as galvanism or ligation of the uterine arteries.

The small class of "inoperable" cases must be managed on general principles, curetting and irrigating for septic endometritis, electricity for pain and hæmorrhage, ligation of the uterine arteries for intractable bleeding, and evacuation of collections of pus or of impacted cysts by vaginal incision.

E. H. L. Oliphant.

Uterine Fibroids and Pregnancy: Subtotal Hysterectomy.

Doléris and Chartier. *Bulletin et Mém de la Soc. Anat. de Paris*, April, 1905.

The chief interest in this communication is in the description of the parts removed at the operation, the myomata exhibiting in a well-marked form the condition of central necrobiosis which has been noted as a not unusual occurrence when these tumours are complicated by pregnancy.

The patient was a woman of 37, who had had no pregnancy before this one, and who sought relief because of the rapid growth of an abdominal swelling. She was found on examination to have a hard lobulated tumour, which filled the pelvis and pushed the cervix up behind the symphysis pubis and extended upwards in the abdomen to above the umbilicus. After removal, the uterus and fibroids weighed 2·3 kilos; on opening the uterus it was found to contain a fœtus measuring 7·5 c.m. There were three small fibroids in the upper part of the uterus, one, the size of a child's head, in the posterior wall, and a pedunculated tumour, of about the size of an apple, attached to the posterior and left side. On section all of these

tumours showed a hard and pearly peripheral zone, and a very vascular, pink and semi-fluctuating central part, from which exuded some colloid fluid.

The authors draw attention to the rapidity of the development of the tumour under the influence of pregnancy, the increased activity of the circulation in the course of barely two months having led to the formation of a central zone in the growths which was characterised by congestion and œdematous infiltration, as is commonly the case, but here more marked than usual. As there is no note of any histological examination, the authors have evidently not recognised the exact nature of the change in the central part of these fibroids, but their description is sufficiently accurate to place it beyond doubt as one of early necrosis. ——— J. S. Fairbairn.

Cancer of the Uterus in Nurnberg.

Flatau. *Münch. med. Wchnschr*, 1905. No. 11.

During twelve years 13,243 patients were seen; 259 of these were afflicted with cancer of the uterus, and 138 of them were inoperable. During the last three years Flatau operated exclusively by the abdominal route, so that cases were operated upon which could not have been attempted through the vagina. In 15 of the cases the body of the uterus was affected, in 51 the cervix and in 55 the portio. The primary mortality was 6·1 per cent. In 75 vaginal total extirpations (mostly treated by forceps) there were three deaths (one sepsis, one pulmonary embolism and one embolism of the superior mesenteric artery). Among eleven abdominal operations (after the method of Wertheim) three deaths occurred from sepsis, while after an equal number of cases operated upon by Mackenrodt's plan there were no deaths. A strict scrutiny of the after results could not be carried out. Flatau noted after ¼—3 years twenty-six cases with return of the disease. Twelve cases were also known to be well, among which were eight of cancer of the body. The merits of the operations after Wertheim and Mackenrodt respectively could not be stated, as sufficient time had not elapsed. The age incidence is also given (23—72). Among the total number operated upon, in only two was the diagnosis dependent upon microscopic examination. The reason for the bad results during the twelve years was due principally to the ignorance and indolence of women, but also to some extent to the doctors, who sent their patients away with a prescription for the hæmorrhage. Flatau does not think that the anatomical broadening of the radical operation will produce the necessary improvement in the results. Little stress is laid upon the incidence of infection of the lymphatic glands, but extension by the lymphatic channels is considered of more importance.

Alex. MacLennan.

A New Plan of Procedure in Retro-uterine Displacements.

MONTGOMERY (E. E.). *Surgery, Gynæcology and Obstetrics*, July, 1905.

"RETRO-DISPLACEMENT of the uterus is distinctive from other displacements in that its existence is a menace to the health of the individual which makes its correction important."

The author maintains that the aim of every operative procedure should be to "imitate Nature's methods and utilise Nature's forces." Alexander's operation and its various modifications carry out this axiom, but they are only applicable to cases without adhesions, and these are cases in which relief is least demanded. Ventro-fixation and suspension operations, he claims, are a departure from the axiom enunciated. He points out the risks in subsequent pregnancy after ventro-fixation. In suspension he says there is no assurance that it may not result in a fixation, and the ligament, when it does form, is inelastic, or it may be so thin as to be of no use; and again, there is great risk of strangulation of loops of intestine.

Operations through the vagina have caused even greater complications during subsequent pregnancies than ventro-suspension, and have failed to afford satisfactory exposure for the treatment of inflammatory conditions of the uterus and its appendages.

Dr. Montgomery then deals with the various methods of shortening the round ligaments after opening the abdomen. The procedure which he adopts is a combination of these, and is as follows:—

(1) "Through an abdominal incision a temporary ligature is passed beneath each round ligament about $1\frac{1}{2}$ in. from the uterine cornu, and secured by a hæmostat; (2) two ends of one of these ligatures are threaded into the eye of a pedicle needle, the round ligament seized with pressure forceps just external to the ligature and drawn toward the median line to render the external portion of the ligament tense, the peritoneum of the anterior portion of the broad ligament is picked up and snipped with scissors, affording a trap-door through which the pedicle needle carrying the ligature is introduced; the ligature is thus carried between the layers of the broad ligament until the abdominal wall is reached, when it is thrust through the muscular structure and is withdrawn from the needle external to the aponeurosis, a similar course follows with the second ligature; (3) having withdrawn the superficial fascia away from the point made by the opening in the aponeurosis, the ligature is rendered tense while pointed scissors are introduced, closed along-

side the ligature, and their blades slightly separated as they are withdrawn; their withdrawal is generally followed by a loop of the round ligament, which is drawn up by the temporary ligature; should the loop of ligament not readily pass through, it can be teased through by pushing back the tissues with the point of the scissors while traction is made by the ligature; loops of both round ligaments having been thus brought out upon the aponeurosis, they are (4) secured by catgut sutures to the aponeurotic layer; careful examination is previously made to insure the proper position of the uterus; (5) the wound is closed; a crescent-shaped incision through the skin, fascia, and aponeurosis above the pubis and a vertical incision of the peritoneum, as suggested by Steinson, affords increased facility in reaching the ligaments and treating diseased conditions within the pelvis, but is prone to the formation of a hæmatoma between the walls, which may become infected and mar the satisfactory convalescence."

He claims that this operation closely imitates the natural conditions, and employs natural ligaments for the support of the uterus. The strongest part of the round ligaments is made use of, and no lesions are caused which may leave adhesions. The pelvic contents can be explored, and if there are any diseased conditions they can be dealt with. Further, there should be no trouble in subsequent pregnancies, as the ligaments will undergo the ordinary evolution and involution.

———— ROBERT JARDINE.

Large Intra-ligamentous Cyst Removed per Vaginam.

OTT (V.). (Russian Obstetrical and Gynæcological Society). *Monats. für Geburts. und Gynäkol.*, Bd. xxi., Heft 6.

THE patient, the subject of this communication, was 42 years old, and the cyst was so large that it contained 30 litres of fluid. The vaginal method was chosen in this case because the patient was much debilitated, and the tumour appeared to be nearly all fluid. On opening the posterior vaginal fornix a smaller cyst, the size of a fœtal head, was first tapped and removed, then the base of the larger one came into view. After tapping and emptying this, it was found to be immovable as it was intra-ligamentous, and its anterior wall had contracted adhesions to the abdominal parietes. After separating the adhesions the peritoneum over the tumour was divided, and then the whole shelled out. The great cavity left by this was filled with gauze and drained into the vagina. The operation was quickly performed, and was particularly easy, the only

difficulty being the presence of adhesions, but these were separable without special difficulty. The adhesions gave rise to no particular bleeding, but if there had been, the abdominal wall was so stretched by the tumour that it was easy to draw it down into the vaginal wound, and any bleeding point could have been folded in and stitched without difficulty. The case is interesting, as an example of a very large cyst removed without difficulty by colpotomy, and shows that size, at all events in some cases, is no contra-indication to the method of operating.

A somewhat similar case was reported at the Russian Obstetrical and Gynæcological Society by W. Jacobson. The tumour here was the size of a seven months pregnancy, and had contracted adhesions to the bladder, uterus and anterior abdominal wall. The adhesions were separated by the fingers through a vaginal incision, and the tumour was removed without difficulty. After the operation the abdominal cavity was inspected through specula, after Vott's method, and it was easy to determine that there were no bleeding points left after separating the adhesions. These two cases, together with the short abstracts of Sianojenski's and Sliwinski's paper in the *Journal of Obstetrics and Gynæcology* for August, 1905, make a series of observations which bear eloquent testimony to the importance of the vaginal route in operating upon cystic abdominal tumours, and effectually do away with some at least of the objections to this method which have been raised. There can be no doubt that with efficient illumination through properly constructed specula, using long-handled instruments posterior colpotomy becomes a much easier operation than it has formerly been considered. Without these aids it may be of extreme difficulty, and is often an impossibility.

THOS. G. STEVENS.

Ciliated Cysts and Glands of the Uterine, Tubal and Pelvic Serosa.

BLOUNT (ANNIE E.). *Amer. Jour. of Obstet.*, August, 1905.

IN pelvic peritonitis, and in other pathological conditions of the female genitalia, there may be found upon the surface of the uterus, tubes and pelvic wall certain small cysts and glands lined with columnar epithelium which is sometimes ciliated, sometimes non-ciliated.

These small cysts were first described by Virchow, and since his description was published many theories have been put forward to account for their origin. These theories may be briefly summarised:

1. That the cysts arise from remains of the Wolffian body.
2. From remains of the Wolffian duct.
3. From displaced germinal epithelium.
4. From infoldings of the hypoblast.
5. By direct spreading by contiguity from the tubal mucosa.
6. By displaced epithelium from the Graffian follicles.
7. By inflammatory hyperplasia of the germinal epithelium of the ovary, on to the surface of the tube and broad ligament.
8. By metaplasia of the flat endothelium covering the peritoneum to tall columnar cells.

In 1900 Pick demonstrated before the Berlin Medical Society ciliated cysts of the pelvic serosa and uterus. He formulated a theory of origin, and requested the writer of this paper to further investigate the question. Pick's theory is thus stated:—"He believes these cysts to be due to the metaplasia of flat peritoneal epithelium into columnar epithelium. The property of forming cilia belongs in the embryo to the pelvic peritoneum. Cilia are found in the Wolffian body, Wolffian and Müllerian ducts, on the surface of the ovary and in other places. Whilst the heart, lungs, and diaphragm are becoming passively covered by the embryonal peritoneal layer, the superficial epithelium of the urogenital fold is making active ingrowths and outgrowths in the stroma of the mesoderm forming the mesonephros, Müller's ducts, etc. The epithelium of the genital fold becomes the pelvic peritoneum. Hence the universal ability of the pelvic peritoneum to form in post-fœtal life ciliated epithelial cysts and larger or smaller ciliated cystic adenomata *is nothing less than a specific property* of the same, present in fœtal life and preserved until maturity under certain circumstances."

It is to be noted that Pick draws no distinction between the ciliated and non-ciliated epithelial cysts.

Directly bearing upon the question of the possibility of the development of cilia by metaplasia are the experiments of Brunn. This observer, by introducing a foreign body into the pleura of a dog, secured the development of a ridge of ciliated epithelium. To demonstrate the development of the cilia, however, special precautions had to be taken; the animal was killed very rapidly and within a few seconds the organs were floated in a 4 per cent. formalin solution without removing them from the body. Muscatello, Paladino, and Kolasow have all demonstrated cilia on the cells of apparently healthy human peritoneum.

The writer records the results of her own observations. These

include seven cases in all, of which cysts of the pelvic peritoneum were found. These cysts were sometimes on the surface of the uterus, sometimes on the tubes, sometimes on the parietal peritoneum. In size they varied from small, scarcely visible objects to cysts the size of a pea; on microscopic examination they were seen to be lined by epithelium, sometimes cubical, sometimes columnar, sometimes ciliated. In some instances they presented small papillomatous infoldings of an adenomatous type. Only very brief descriptions of the sections are given, the writer relying chiefly upon a series of 23 excellent illustrations to enforce her conclusions.

She refers to the recent work of von Kahlden and Max Walthard, who "marshal an invincible phalanx of cases under each class of ovarian adenomata, to show its direct origin from proliferation, invagination and metaplasia of the germinal epithelium of the surface," and entirely endorses their conclusions. She points out further that in one case where the small multiple peritoneal cysts were an accompaniment of large proliferating ovarian cysts, the little cysts resembled the ovarian cysts in all peculiarities of structure, and continues:—"Now it seems likely that, in this case, the same tendency which caused proliferation of the germinal epithelium of the ovary caused the formation of independent cyst-adenomata of other parts of the pelvic peritoneum. . . . The drawings show ingrowths of solid and tube-like projections, and tubes with cystic dilatations on the distal end with direct gradation of flat to cylindrical epithelium in the same specimen. To summarise in a sentence, then, the remarkable property of the pelvic peritoneum to develop ciliated cysts in post-natal life is nothing more than the specific property of the same present in fœtal life, and preserved until maturity under certain circumstances, or possibly reverted to under the influence of appropriate stimulus."

Note by Abstractor.—To find in the same specimen all gradations of epithelium from the columnar ciliated to the flattened cell cannot be accepted as proof of Pick's theory. Such gradations are commonly found in parovarian cysts, in hydrosalpinx, and in other conditions in which the ciliated epithelial lining of a cyst is subject to pressure from the cyst contents.

——— Herbert Williamson.

Insufflation of Oxygen Gas into the Abdomen in Septic Peritonitis.

Costa (R.). *Annali di Ostet. e Ginecol.*, July, 1905.

The author relates two cases; in the first of these, in the practice of Prof. Mangiagalli, the patient, after an operation for extra-

uterine pregnancy, in which many close adhesions to the bowel were broken through, was found to be suffering from marked general sepsis. The abdomen was re-opened, and washed out with salt solution—a procedure which Mangiagalli has never found to ward off a fatal termination in septic peritonitis—and was then distended several times with oxygen. This patient ultimately recovered. There is no mention made of cultures from the discharges, but it is assumed that the infection was from *bacillus coli*. In the second case the patient succumbed to septic peritonitis after an abdominal section performed on a rupture of the uterus in a neglected shoulder presentation. In her case the author injected oxygen into the abdomen, but without any perceptible benefit. Experiments on guinea-pigs and rabbits showed that after injections of *bacillus coli* into the abdomen insufflations of oxygen were sometimes curative, but that after injections of pyococci the oxygen merely delayed the lethal termination. Dr. Costa refers to the favourable results obtained by Javaux in Belgium by continuous irrigation with oxygen gas. The author claims that this method will at least do no harm.

E. H. L. Oliphant.

Diffuse Septic Peritonitis.

Eisendrath (D. N.). *Illinois Med. Journal*, May, 1905.

Eisendrath read a paper before the Chicago Medical Society on three cases of diffuse septic peritonitis following on appendicitis. Unfortunately he does not say that streptococcus was actually found in these cases, but merely says that they were of a "virulent type which is generally recognised as streptococcic." He treated these patients by the Fowler method, that is, by free drainage, after washing out the abdomen with saline solution, keeping the patient in bed with the head of the bed raised to an angle of 45 degrees. Eisendrath also gave the patients saline solution continuously per rectum. A small catheter was introduced into the rectum attached to an irrigator with a foot of head, and with a pinch-cock so arranged that a few drops of saline solution kept on flowing all the time. He claims that the statistics show the great value of this method, though doubts were expressed by some of the speakers in the discussion which followed.

E. H. L. Oliphant.

REVIEWS OF RECENT BOOKS.

A Contribution to the Pathology of the Endometrium. By Jessie M. Macgregor, L.R.C.P. and S., M.D., Junior Acting Medical Officer, Edinburgh Hospital for Women and Children; Lecturer on Gynæcology in the Edinburgh School of Medicine of the Royal Colleges. Edinburgh and London: Green and Sons, 1905.

Dr. Macgregor has undertaken creditably a task of some magnitude. She has recognised the main difficulty ever attendant on the study of the endometrium, the impossibility, to use her own words, of securing a well-preserved normal specimen as a standard of comparison. For the uterus is not removed save for disease either in itself or in some adjacent structure which must influence its tissues more or less abnormally, whilst death from an acute or chronic malady not arising in the genital tract usually involves great modifications prejudicial to the structure of the endometrium. That membrane is subject to rapid *post-mortem* changes, even within an hour of death, so that it may be half decomposed in a specimen of uterus from a healthy woman killed by accident, before it comes into expert hands. Dr. Macgregor reminds us that a further source of confusion lies in the physiological modifications of the uterus, hence under the most favourable circumstances it is difficult to interpret accordingly the essential characters of a normal endometrium. For these reasons the pathology of the membrane is hardly based on firm and reliable histological foundations, a fact ever to be taken into account. There is less difficulty, of course, in direct proportion to the predominance of pathological changes; for when a cancerous uterus is submitted to the pathologist it has usually been obtained under the most favourable conditions, fresh from a living subject, and the morbid condition is of a kind observed in many other parts of the body. Again, we may all agree about the sample of "undoubted sarcoma" represented by the author in Fig. 53 in the fine series of 106 microscopical drawings which adorn this work. These illustrations are the most reliable and essential portion of its contents, for theories pass away whilst first-class drawings do not depreciate so rapidly.

Turning, however, from neoplasms, or morbid growths as Paget would term them, we find greater difficulty in the study of the endometrium in direct proportion to the predominance of changes less wide

than cancer from the normal standard. Dr. Macgregor does, therefore, not surprise us when she states in her summary that there is much that is not yet fully explained in the benign changes in the endometrium. The author advocates the careful examination of scrapings from *every* (italics in the original) case of curetting, not merely those which possess unusual or suspicious features.

The author has planned her monograph on the above sound principles. With the permission of the Committee of the Laboratory of the Royal College of Physicians, Edinburgh, she has been permitted to examine the specimens of two hundred and fifty curettings from the uterus which have been sent to the Laboratory for report. The author has taken full advantage of the privilege, and has made a minute analysis of every specimen and of every histological element in each specimen. The analysis of the changes in the epithelium is particularly good. The author notes that it is rare to find in a non-malignant endometrium any multiplication of the cell-layers of the mucous membrane, the definite one-celled layer being "very consistently adhered to," to use her own phrase, so that any case in which there is a tendency to multiplication of the layers should be regarded with great suspicion. She adds that an obliquely cut gland may give the appearance of multiplication of the cells of its lining, a warning which she considers "hardly necessary," though the beginner is very likely to misinterpret such an appearance. The question of the histology of incipient cancer is of extreme importance, and on that account Dr. Macgregor has restricted her illustrations of malignant disease to its very earliest recognisable stages. The relation of decidual to epithelial and cancerous elements is also closely scrutinised. The author strongly advocates the use of the old-fashioned term "uterine catarrh" in preference to "endometritis," and on the strength of the evidence obtained from sections classifies this affection under four heads:—(1) Œdematous degeneration, due to protracted irritation and congestion; (2) non-malignant new-growths (epithelial or interstitial), cause unknown; (3) persistence of products of pregnancy; (4) arteriosclerosis, cause unknown. The author's views of the clinical relations of uterine disease to the histological changes in the endometrium will probably be accepted or rejected more or less in proportion to the degree in which they support or oppose the teaching of others. Thus Dr. Macgregor states that it is known that the great prevalence of pain in non-inflammatory cases in unmarried or multiparous women is largely due to the narrowness and rigidity of the cervical canal or to irregular muscular spasm, and not to disease of the endometrium, which is usually a secondary condition. She adds that even this factor

is variable, since pain persists in virgins after dilatation when the cervix is known to be freely patent, and with very varying states of the endometrium. Yet many reject the rigidity theory largely on the very important fact which the author herself puts forward as a qualification. We do not know whether we should tremble or yawn at the prospect of the re-opening of the obstruction theory, the source of so much strife in the pre-laparotomy stage of gynæcology; nevertheless, the question as to the cause of pain in non-inflammatory cases is not settled. We understand why the histology of cancer of the endometrium is easier than the histology of uterine catarrh, therefore we have little difficulty in comprehending why the latter is less abstruse than the question of pain independent of inflammation. For in the second case, as in the first, we at least know that the endometrium is the seat of disease, in the third that membrane may play only a secondary part in the malady. As Dr. Macgregor observes, the amount and nature of the pain is of little use as a guide to the state of the endometrium and, with very few exceptions, it is impossible to infer from the changes in the endometrium what amount of pain would be likely to be present.

The chief merit of the painstaking labour which has resulted in the production of this work is its tendency to turn the gynæcologist's attention from fields where he has triumphed to others where he knows too well that much remains to be done. Incipient cancer, the true nature of uterine inflammation and the origin of pelvic pain, deserve a little more consideration, for ovariotomy, hysterectomy and ectopic gestation can take care of themselves.

Les Dégénérescences des Fibro-Myomes de l'Uterus. By G. Piquand. First edition. Paris: G. Steinheil, 1905.

In this work the author places before us an exhaustive study of the degenerations to which myomata of the uterus are subject. His researches are founded upon the study of forty-two examples of various forms of degenerate myomata. These comprise eleven cases of fibrotic degeneration, six cases of calcareous degeneration, seven cases of œdematous degeneration, five cases of sarcomatous degeneration, four cases of cystic degeneration, one case of suppuration, one case of total necrobiosis, three cases of gangrene and four cases of tumours co-existent with carcinoma of the uterus.

The author divides these degenerations into two main classes—firstly, those in which the histological changes occur apart from the

action of infective agents; secondly, those in which they are due to the presence of such agents.

In the first class he includes:—

1. Fibrotic degeneration, including rare cases in which cartilage is found in the tumour.

2. Calcareous degeneration, including exceptional cases in which actual ossification occurs.

3. Œdematous degeneration.

4. Sarcomatous degeneration.

5. Nævoid (telangiectatic) degeneration.

6. Epithelial degeneration.

7. Fibro-cystic degeneration.

In the second class he includes:—

1. Suppuration.

2. Gangrene.

Fatty degeneration is not held to be a pathological entity, being, according to Dr. Piquand, only an advanced stage of necrosis. On the subject of fibrotic degeneration we note that the author states that it may begin (*a*) on the periphery or (*b*) in the centre of the tumour, though he allows that in the majority of cases these two types of fibrotic degeneration go on simultaneously. He notes that in these cases evidences of chronic endarteritis are present, and he compares the process with cirrhosis of vascular origin met with in other organs. The actual production of fibrous tissue is attributed partly to a chronic inflammation which has its starting point in the vessel walls, and partly to the anæmic condition of the tumour tissues which results from the gradual obliteration of the vessels. Fibrotic degeneration of a myoma may be complicated by a calcareous or œdematous change. A very interesting reference is made to a few recorded cases in which cartilage has been found in these tumours. He also notes the frequency with which this degeneration is followed by a central aseptic necrosis of ischæmic origin. A long section is devoted to the clinical aspect of this species of degeneration, which proves interesting reading.

The second chapter is devoted to a consideration of calcareous degeneration, beginning with a historical survey of the subject. Calcification may begin like fibrotic degeneration, either peripherally or centrally. Contrary to the general opinion of pathologists, that the calcareous deposit first occurs around a central capillary, Piquand is inclined to the view that in certain cases at all events the change first begins at points remote from the vessels which may subsequently and for a considerable time continue to run uninterrupted between masses

of devitalised calcific material. The author discusses the recorded cases in which ossification has occurred in these tumours, particularly examples carefully investigated by Freund and Ascher. It appears to be undoubted that under very exceptional circumstances this variety of degeneration (or rather should it be development?) does occur.

Under the head of œdematous degeneration it is interesting to note that chemical examination of tumours in this condition reveal an almost complete absence of mucin. It is certain then that the term "myxomatous" as applied to this form of metamorphosis is a misnomer.

A very full account is given of sarcomatous degeneration. From a compilation of the published experience of a number of authors Dr. Piquand deduces the frequency of this complication at 2 per cent.! The question whether the majority of uterine sarcomata are really transformed myomata receives consideration. Of 58 cases examined, 26 were of the spindle-celled, 20 of the mixed cells and 12 cases were of the round-celled variety. Melanotic sarcomata have been recorded. Whitridge Williams has collected five examples. The author suggests three possibilities in the histogenesis of these tumours—firstly, that they develop from the connective tissue; secondly, from the endothelium; and, thirdly, from the muscle cells of the myoma. It is interesting to remember that uterine endotheliomata have been recorded by many authors lately. On the other hand, Whitridge Williams, Cullen and others have demonstrated the direct transformation of muscle fibres into sarcoma cells.

Under the head of telangiectatic degeneration, that species of metamorphosis is described in which the tumour undergoes a nævoid change; we prefer this word to the more cumbrous appellation.

Next epithelial degeneration is dealt with. The first cases considered are those in which a primary carcinoma is alleged to have developed in a myoma. But a few years ago such an occurrence would have been deemed an impossibility, but in the light of the recent papers on adeno-myomata, its possibility or even probability cannot be denied. Some of the recorded cases may possibly have been examples of this innocent condition.

The question whether the myomatous uterus is more prone to carcinoma than the organ not so affected receives attention. On the whole the author thinks that the evidence shows that somewhere between 3 and 4 per cent. of cases of myomata are complicated by carcinoma of the uterus, and that myomata do (especially as regards the cervix) predispose to carcinoma. This is an important observation, and, if true, certainly supports the views of those who prefer total hysterectomy to the sub-total operation.

The chapters on degenerations not due to an infective cause conclude with a review of cyst development in myomata. He divides these cysts into those with and those without an epithelial lining. Concerning the first group, he favours the view that the majority of these are developed from aberrant gland spaces, either of developmental origin or derived from evaginations of the uterine mucosa.

The book concludes with the changes of infective origin met with in myomata, these chapters, like those preceding them, bearing evidence of much patient investigation.

There is an extensive bibliography appended to each section.

We congratulate the author of this monumental work on his achievement. No such exhaustive review of this interesting and important subject has previously appeared in print. It represents an immense amount of painstaking work, and will prove of the greatest service to future workers in this field of pathology.